



HERE Android SDK

Developer's Guide

Starter Edition Version 3.3.1

Important Information

Notices

Topics:

This section contains document notices.

- [*Legal Notices*](#)
- [*Document Information*](#)
- [*Service Support*](#)

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Document Information

Product

Name:	HERE Android SDK
Version:	Starter Edition Version 3.3.1

Document

Name:	HERE Android SDK Developer's Guide
ID:	1feb3c1-1489773762-3db914db
Status:	FINAL
Date:	2017-Mar-17, 18:07 (GMT)

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Chapter 1

Overview

Topics:

- [*What is the HERE Android S...*](#)
- [*Feature List*](#)
- [*Legal Requirements*](#)

The articles that follow introduce the HERE Android SDK, explain essential concepts and describe the common use cases it supports.

What is the HERE Android SDK?

The HERE Android SDK provides a set of programming interfaces that enable developers to build an immersive, geographically-aware Android applications by leveraging a powerful and flexible mapping platform. Through this SDK, developers can add rich location features such as routing, interactive maps, and global place search to their applications.

Feature List

The main features offered by the HERE Android SDK are listed below.

■ **Note:** The HERE Android SDK is designed for standalone Android APK development. Using the HERE SDK for platform-embedded app development (apps that ship with the device ROM) is not supported.

Mapping:

- Dynamically download maps for more than 190 countries in over 60 languages
- Map styles: normal street map, satellite map, transit map, and more
- Touch gestures (including pan, flick, and pinch zoom)
- Overlay objects on the map such as polylines, polygons, icons, and routes
- Overlay custom raster tiles on the map (for example, to display heat maps)
- Ability to render raster tiles and map objects interleaved within different map layers

Search:

- Search through a broad set of geographical content across the globe, (including streets, address points, and categorized places)
- Search for a specific place or explore by categories
- Access rich details for a Point of Interest from third-party content sources (including images, ratings, reviews, and editorials)
- Perform geocoding and reverse geocoding lookups

Directions:

- Online Car and Pedestrian Route Directions
- Routing options (Highways, Tolls, Fastest etc.)
- Specify preferred route type (fastest or shortest) and route options (such as avoiding toll roads, motorways, and parks)
- Alternate routes

Legal Requirements

In addition to the applicable *terms and conditions* under which you have licensed the SDK, the following shall apply.



Components of the HERE SDK collect certain information from your application. Such information includes access credentials (`App_Id` and `App_Code` – see also [Authenticating Applications](#) on page 24) and the types of features utilized by your application when used by end users. The information does not identify an individual end user. However, your application's privacy policy must disclose to the end users that you have licensed products and services from HERE and that such information is collected from your application as it is being used by end users and that HERE collects and processes such information from the application.

Chapter 2

Quick Start

Topics:

- [*Creating a Simple Application*](#)
- [*Extending the Simple Application*](#)
- [*Adding Route Calculation to the Application*](#)

The example in this section provide information to help you start using the HERE Android SDK.

Creating a Simple Application Using the HERE SDK

This tutorial provides instructions on how to create a simple application that uses the HERE Android SDK to render a map on an Android device.

This tutorial assumes that you are using the *Android Studio* development environment. Development tasks for this basic application include:

- Acquire HERE credentials for accessing map services.
- Create a new Android Studio project.
- Add necessary resources, permissions, and a map fragment to the project.
- Modify `AndroidManifest.xml`
- Initialize the map fragment to create a map instance and associate this map with the map fragment for rendering on the client device.

Acquire HERE SDK Credentials

Typically, before developing a new HERE SDK application, you need to acquire a set of credentials by registering your application on <http://developer.here.com>. Each application requires a unique set of credentials. When you register your app, the registered bundle identifier must match the package name in your project.

Create a New Android Studio Project

The second stage of developing an application using the HERE SDK is to create a new project in Android Studio as follows:

1. From the Welcome to Android Studio dialogue box, select **New Project...** to open the Create New Project dialog.
2. In the New Android Application dialog, under Application name, specify an appropriate application name. The remainder of this tutorial uses `BasicMapSolution` as the application name.
3. Under Company Domain, specify an appropriate domain.
4. Edit the package name by clicking the **Edit** link. The remainder of this tutorial uses `com.here.android.tutorial` as the package name.

■ **Important:** You must use the same package name as you have registered on developer.here.com. Failure to do so leads to a blank map to appear in your application.

You can also edit this package name later in your `AndroidManifest.xml`:

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
    package="com.your.package.name.here"  
    android:versionCode="1"
```

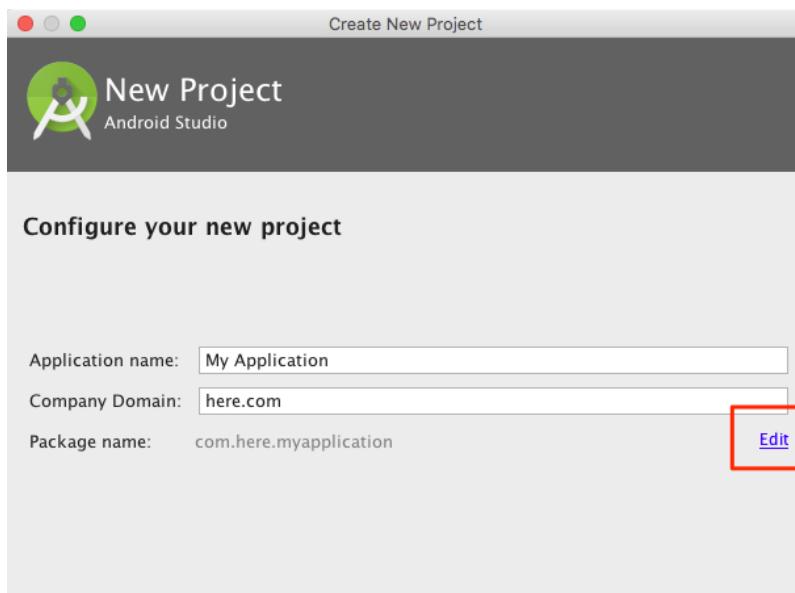
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```
    android:versionName="1.0" >
```

Figure 1: Edit the Package Name



5. Under Project Location, specify an appropriate project location in the file system.
6. Click **Next**.
7. Select the form factors supported by your application. For the purpose of this tutorial, check Phone and Tablet.
8. Under Minimum SDK, select the lowest version of the Android SDK you wish to support. For this sample application, use Android 4.0.3 "Ice Cream Sandwich".
9. Click **Next**.
10. You may be prompted to agree to a License Agreement. Click Accept, and then **Next** to install SDK components. After the installation is complete, click **Next** again.
11. In the "Add an activity to Mobile" dialog box, select Empty Activity and click **Next**.
12. In the "Customize Activity" dialog box, specify an appropriate activity name in Activity Name. This tutorial uses the name `BasicMapActivity`.
13. Under Layout Name, specify an appropriate layout name. (This tutorial uses `activity_main`.)
14. Click **Finish**.

Result: Andriod Studio creates the structure for your project and opens the development environment.

A few views are available in the Android Studio development environment. The Android view shows a flattened view of the application's structure, and the Project view shows a flattened view of the project's structure, including Gradle-related files.

The Android view provides quick access to key source files of your Android application. Selecting the `activity_main.xml` file in Android view opens the file in the Layout Editor and allows you to drag-and-drop widgets into your layout.

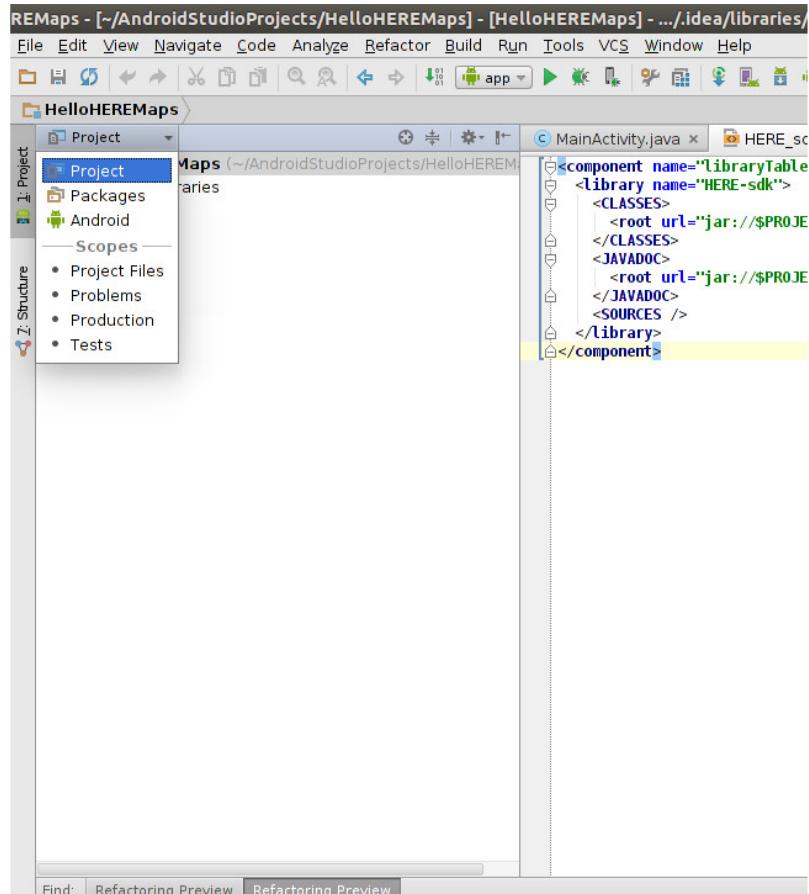
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The following image shows how to switch between Android and Project view.

Figure 2: Switching Views in Android Studio



Add HERE SDK Libraries to Your Project

After creating the skeleton of your new application, add the HERE SDK resources as follows:

1. From the directory where you installed the HERE SDK, copy the contents of the `HERE-sdk/libs/` folder to your project's `app/libs/` folder.
2. Optional: Download the JTS Topology Suite (version 1.13 or later) from <http://sourceforge.net/projects/jts-topo-suite/>, extract its contents, and add the `jts-* .jar` library into the `app/libs/` folder. The JTS library is required for rendering complex polygons.
3. In your Android Studio project's `app/libs/` folder, right-click the `*.JAR` files and select **Add as Library...**, then under the Add To module, select **app** and click **OK**.
4. From the Android Studio Project View, click `.idea > libraries`, ensure `HERE_sdk_javadoc.xml` is not on the list. If it exists, delete `HERE_sdk_javadoc.xml`.
5. Optional: If you plan on extending this application with HERE Places or Routing functionality, add the `JSON` library (release 2.2.4 or higher) to your project. You can add this library by clicking **File > Project Structure**. Next, select `app` from within the **Modules** grouping, and click on the **Dependencies** tab. You can then click the **+** button, select **Library dependency**, and look for the `com.google.code.gson` library.

Modify AndroidManifest.xml and Add HERE Credentials

1. Add the HERE credentials to `AndroidManifest.xml`. For instructions on how to edit this file, see [Authenticating Applications](#) on page 24.
2. Modify the opening `<application>` by adding the `android:hardwareAccelerated="true"` attribute.

```
<application android:icon="@drawable/icon"  
    android:label="@string/app_name" android:hardwareAccelerated="true">
```

3. Add the following markup before the `<application></application>` tags:

```
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>  
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>  
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE"/>  
<uses-permission android:name="android.permission.INTERNET"/>  
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE"/>
```

■ **Note:** If your app uses Android API level 23 (Android 6.0) or above, you must also add code to request for permissions during runtime. You can find more information in the [Request for Permissions](#) section.

4. **Optional:** To enable quick javadoc reference within your Android Studio environment, click on `.idea/libraries/HERE_sdk.xml` to edit it, and then add the following after `</CLASSES>` and before `<SOURCES />`:

```
<JAVADOC>  
    <root url="jar://$PROJECT_DIR$/app/libs/HERE-sdk-javadoc.jar!/" />  
</JAVADOC>
```

Result: Your project is able to make use of APIs from the HERE SDK.

Edit activity_main.xml

Along with permissions and credentials, you must add an Android `<fragment />` tag to set up the map fragment that your application activity is associated with. In this section, we add a text label (generated as part of the default new application) and a map as follows:

1. From the Android View, under the `res/layout/` folder of your project, double-click the `activity_main.xml` file to open it for editing.
2. Ensure that the XML file has `<LinearLayout></LinearLayout>` as its root element. Depending on your version of Android Studio, this may be a `RelativeLayout` instead. If that is the case, replace the contents of the file with the following:

```
<LinearLayout  
    xmlns:android="http://schemas.android.com/apk/res/android"  
    xmlns:tools="http://schemas.android.com/tools"  
    android:layout_width="fill_parent"  
    android:layout_height="fill_parent"  
    android:orientation="vertical" >  
  
    <TextView  
        android:id="@+id/title"  
        android:layout_width="wrap_content"  
        android:layout_height="wrap_content"  
        android:text="Hello World"  
        tools:context=".BasicMapActivity" />  
  
</LinearLayout>
```

3. Add the following markup beneath the <TextView/> tag:

```
<!-- Map Fragment embedded with the map object -->
<fragment
    class="com.here.android.mpa.mapping.MapFragment"
    android:id="@+id/mapfragment"
    android:layout_width="match_parent"
    android:layout_height="match_parent"/>
```

Result: When MapFragment is initialized, your application's BasicMapActivity contains a MapFragment UI element (with the ID mapfragment) that owns a Map object.

Initializing the Map Fragment

When you have defined the basic layout of the application and acquired necessary permissions, the final step is to initialize the instance of the MapFragment class, thus creating and associating a Map with the MapFragment declared in the activity_main.xml file:

- From the Android View, double-click the BasicMapActivity.java file under the java folder to open it for editing.
- Revise the import statements and functional logic of BasicMapActivity to look like the following:

```
package com.here.android.tutorial;

import android.app.Activity;
import android.os.Bundle;

import com.here.android.mpa.common.GeoCoordinate;
import com.here.android.mpa.common.OnEngineInitListener;
import com.here.android.mpa.mapping.Map;
import com.here.android.mpa.mapping.MapFragment;

public class BasicMapActivity extends Activity {

    // map embedded in the map fragment
    private Map map = null;

    // map fragment embedded in this activity
    private MapFragment mapFragment = null;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        initialize();
    }

    private void initialize() {
        setContentView(R.layout.activity_main);

        // Search for the map fragment to finish setup by calling init().
        mapFragment = (MapFragment) getSupportFragmentManager().findFragmentById(
            R.id.mapfragment);
        mapFragment.init(new OnEngineInitListener() {
            @Override
            public void onEngineInitializationCompleted(
                OnEngineInitListener.Error error)
            {
                if (error == OnEngineInitListener.Error.NONE) {
                    // retrieve a reference of the map from the map fragment
                    map = mapFragment.getMap();
                    // Set the map center to the Vancouver region (no animation)
                    map.setCenter(new GeoCoordinate(49.196261, -123.004773, 0.0),
                        Map.Animation.NONE);
                }
            }
        });
    }
}
```

```
// Set the zoom level to the average between min and max
map.setZoomLevel(
    (map.getMaxZoomLevel() + map.getMinZoomLevel()) / 2);
} else {
    System.out.println("ERROR: Cannot initialize Map Fragment");
}
}
});
}
```

Request for Permissions

If your app supports Android 6.0 or above, your app needs to ask users to grant certain permissions at runtime. For more information about this requirement, see [Requesting Android Permissions](#) on page 58.

Run the Application

You can run your simple application by pressing the key combination **Shift + F10** (or **Ctrl + R** on Macs) from within Android Studio. The application renders a map retrieved from the HERE servers. When you are running your application on a device, make sure a data connection is enabled.

Extending the Simple Application

Beyond creating a [basic application](#), you can extend your application with the use of features from the HERE Android SDK. This tutorial introduces methods to change map attributes such as map center, daytime/nighttime map schemes, and zoom levels.

Getting Started

This tutorial uses the Android project from [Creating a Simple Application Using the HERE SDK](#) on page 11 as a starting point.

■ **Note:** The tasks presented on this page assume that you gave the name "BasicMapSolution" to your Android Studio project and the name `com.here.android.tutorial` to your application package.

Add a "Go Home" Button

Within this map-based application, users can use gestures to pan, zoom in, and zoom out on different regions on the map. They can also use a UI element to reset the initial map view.

In the following steps, we add a "Go Home" Button element to BasicMapSolution that resets the application's position, orientation, and tilt back to their initial values:

1. From the Android Studio Project view, double-click the `BasicMapSolution/app/src/main/res/values/strings.xml` file to open it for editing.
2. Add the following line to the group of `<string></string>` tags:

```
<string name="label_button_gohome">Go Home</string>
```

3. From the Android Studio Project view, double-click the file BasicMapSolution/app/src/main/res/layout/activity_main.xml to open it for editing.

4. Add the following markup directly above the <fragment /> tag:

```
<!-- UI element declaration for "Go Home" button -->
<android.widget.Button
    android:id="@+id/homebutton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/label_button_gohome"
    android:onClick="goHome" />
```

5. From the Android Studio Project view, double-click the BasicMapSolution/src/com.here.android.tutorial/BasicMapActivity.java file to open it for editing.
6. Add the following lines to the import statements near the top of the source file:

```
import android.view.View;

import java.util.List;
```

7. Add the following method to the end of the class:

```
// Functionality for taps of the "Go Home" button
public void goHome(View view) {
    if (map != null) {
        // Change map view to "home" coordinate and zoom level
        map.setCenter(new GeoCoordinate(49.196261, -123.004773, 0.0),
                      Map.Animation.NONE);
        map.setZoomLevel((map.getMaxZoomLevel() + map.getMinZoomLevel()) / 2);
    }
}
```

8. Press **Shift + F10** (or **Ctrl + R** on Macs) to run this extended basic HERE Android SDK application.

Result: Your HERE Android SDK application displays a map centered on the Vancouver municipal region, plus a "Go Home" button near the top-left corner that allows users to reset the map to its initial view.

Add a "Change Map Scheme" Button

This task introduces the following HERE Android SDK class methods:

- com.here.android.mpa.mapping.Map.getMapScheme()
- com.here.android.mpa.mapping.Map.getMapSchemes()
- com.here.android.mpa.mapping.Map.setMapScheme()

There are numerous map schemes available from HERE Android SDK. You can add a UI element to your application that allows users to change the scheme of the map they are viewing.

Add a "Change Map Scheme" Button element to the BasicMapSolution application as follows:

1. From the Android Studio Project view, double-click the BasicMapSolution/app/src/main/res/values/strings.xml file to open it for editing.
2. Add the following lines to the group of <string></string> tags:

```
<string name="label_button_changescheme">Change Map Scheme</string>
```

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3. From the Android Studio Project view, double-click the file BasicMapSolution/app/src/main/res/layout/activity_main.xml to open it for editing.
4. Add the following markup directly beneath the homebutton tag but above the <fragment /> tag:

```
<!-- UI element declaration for "Change Map Scheme" button -->
<android.widget.Button
    android:id="@+id/schemebutton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/label_button_changescheme"
    android:onClick="changeScheme" />
```

5. From the Android Studio Project view, double-click the file BasicMapSolution/app/src/main/java/com.here.android.tutorial/BasicMapActivity.java to open it for editing.
6. Add the following to the import statements near the top of the source file:

```
import java.util.List;
```

7. Add variable declarations for initial_scheme to the top of the BasicMapActivity class, immediately beneath the declaration for map, as follows:

```
public class BasicMapActivity extends Activity {

    // map embedded in the map fragment
    private Map map = null;

    // map fragment embedded in this activity
    private MapFragment mapFragment = null;

    // Initial map scheme, initialized in onCreate() and accessed in goHome()
    private static String initial_scheme = "";

    @Override
    public void onCreate(Bundle savedInstanceState) {
        ...
    }
}
```

8. Create function private void onMapFragmentInitializationCompleted() and move all the existing text within OnEngineInitListener's onEngineInitializationCompleted() into it:

```
private void onMapFragmentInitializationCompleted() {
    // retrieve a reference of the map from the map fragment
    map = mapFragment.getMap();
    // Set the map center coordinate to the Vancouver region (no animation)
    map.setCenter(new GeoCoordinate(49.196261, -123.004773, 0.0),
        Map.Animation.NONE);
    // Set the map zoom level to the average between min and max (no
    // animation)
    map.setZoomLevel((map.getMaxZoomLevel() + map.getMinZoomLevel()) / 2);
}
```

9. Update the OnEngineInitListener's onEngineInitializationCompleted() implementation as follows:

```
mapFragment.init(new OnEngineInitListener() {
    @Override
    public void onEngineInitializationCompleted(OnEngineInitListener.Error error) {
        if (error == OnEngineInitListener.Error.NONE) {
            onMapFragmentInitializationCompleted();
        }
    }
});
```

...

10. Add the following method to the end of the class:

```
// Functionality for taps of the "Change Map Scheme" button
public void changeScheme(View view) {
    if (map != null) {
        // Local variable representing the current map scheme
        String current = map.getMapScheme();
        // Local array containing string values of available map schemes
        List<String> schemes = map.getMapSchemes();
        // Local variable representing the number of available map schemes
        int total = map.getMapSchemes().size();

        if (initial_scheme.isEmpty())
        {
            //save the initial scheme
            initial_scheme = current;
        }

        // If the current scheme is the last element in the array, reset to
        // the scheme at array index 0
        if (schemes.get(total - 1).equals(current))
            map.setMapScheme(schemes.get(0));
        else {
            // If the current scheme is any other element, set to the next
            // scheme in the array
            for (int count = 0; count < total - 1; count++) {
                if (schemes.get(count).equals(current))
                    map.setMapScheme(schemes.get(count + 1));
            }
        }
    }
}
```

11. To ensure that a tap of the "Go Home" button resets the map scheme while it is resetting everything else (coordinates, zoom level, etc.), add the following lines to the end of the goHome() method:

```
// Reset the map scheme to the initial scheme
if (!initial_scheme.isEmpty()) {
    map.setMapScheme(initial_scheme);
}
```

12. Press the key combination **Shift + F10** (or **Ctrl + R** on Macs) to run this extended basic HERE Android SDK application.

Result: Your HERE Android SDK application displays a map centered on the Vancouver municipal region, plus a "Go Home" button near the top-left corner that allows users to reset the map to its initial view, followed by a "Change Map Scheme" button that allows users to cycle through available map schemes.

Adding Route Calculation to the Simple Application

An important feature of many map-based applications is offering directions to users by calculating a route and rendering it on a map. This tutorial lesson introduces the addition of such functionality to applications developed using the HERE Android SDK.

Getting Started

This tutorial uses the Android project from [Creating a Simple Application Using the HERE SDK](#) on page 11 as a starting point.

- **Note:** The tasks presented on this page assume that you gave the name "BasicMapSolution" to your Android Studio project and the name com.here.android.tutorial to your application package.

Add a "Get Directions" Button

Add a "Get Directions" Button element to the BasicMapSolution application as follows:

1. From the Project view, double-click the BasicMapSolution/res/values/strings.xml file to open it for editing.
2. Add the following lines to the existing group of strings

```
<string name="label_button_getdirections">
    Get Directions
</string>
<string name="textview_routecoordinates_2waypoints">
    Press "Get Directions" button to calculate a route:\nStart: Burnaby\nEnd: YVR Airport
</string>
```

3. From the Android Studio Project view, double-click the BasicMapSolution/app/src/main/res/layout/activity_main.xml file to open it for editing.
4. Add the following markup directly beneath the LinearLayout tag:

```
<!-- UI element declaration for "Get Directions" button -->
<android.widget.Button
    android:id="@+id/directionsbutton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/label_button_getdirections"
    android:onClick="getDirections" />
```

5. Next, change the <TextView/> tag to the following:

```
<TextView
    android:id="@+id/title"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/textview_routecoordinates_2waypoints"
    tools:context=".BasicMapActivity" />
```

6. From the Project view, double-click the BasicMapSolution/app/src/main/java/com.here.android.tutorial/BasicMapActivity.java file to open it for editing.
7. Add the following lines to the import statements near the top of the source file:

```
import java.util.EnumSet;
import java.util.List;
import android.view.View;
import android.widget.TextView;
import android.widget.Toast;
import com.here.android.mpa.common.GeoBoundingBox;
import com.here.android.mpa.mapping.MapRoute;
import com.here.android.mpa.routing.RouteManager;
import com.here.android.mpa.routing.RouteOptions;
import com.here.android.mpa.routing.RoutePlan;
```

```
import com.here.android.mpa.routing.RouteResult;
```

8. Add the declaration of these private member variables above the `onCreate` method:

```
// TextView for displaying the current map scheme  
private TextView textViewResult = null;  
  
// MapRoute for this activity  
private MapRoute mapRoute = null;
```

and to set up the member variables for use later, add these lines at the end of the `initialize` method:

```
textViewResult = (TextView) findViewById(R.id.title);  
textViewResult.setText(R.string.textview_routecoordinates_2waypoints);
```

9. Add code to handle the click of the "Get Directions" button at the end of the class: First, create an implementation of the listener:

```
private RouteManager.Listener routeManagerListener =  
    new RouteManager.Listener()  
{  
    public void onCalculateRouteFinished(RouteManager.Error errorCode,  
        List<RouteResult> result) {  
  
        if (errorCode == RouteManager.Error.NONE &&  
            result.get(0).getRoute() != null) {  
  
            // create a map route object and place it on the map  
            mapRoute = new MapRoute(result.get(0).getRoute());  
            map.addMapObject(mapRoute);  
  
            // Get the bounding box containing the route and zoom in  
            GeoBoundingBox gbb = result.get(0).getRoute().getBoundingBox();  
            map.zoomTo(gbb, Map.Animation.NONE,  
                Map.MOVE_PRESERVE_ORIENTATION);  
  
            textViewResult.setText(  
                String.format("Route calculated with %d maneuvers.",  
                    result.get(0).getRoute().getManeuvers().size()));  
        } else {  
            textViewResult.setText(  
                String.format("Route calculation failed: %s",  
                    errorCode.toString()));  
        }  
    }  
  
    public void onProgress(int percentage) {  
        textViewResult.setText(  
            String.format("... %d percent done ...", percentage));  
    }  
};
```

Next, add the implementation of `getDirections()` below:

```
// Functionality for taps of the "Get Directions" button  
public void getDirections(View view) {  
    // 1. clear previous results  
    textViewResult.setText("");  
    if (map != null && mapRoute != null) {  
        map.removeMapObject(mapRoute);  
        mapRoute = null;  
    }  
  
    // 2. Initialize RouteManager
```

```
RouteManager routeManager = new RouteManager();

// 3. Select routing options via RoutingMode
RoutePlan routePlan = new RoutePlan();

RouteOptions routeOptions = new RouteOptions();
routeOptions.setTransportMode(RouteOptions.TransportMode.CAR);
routeOptions.setRouteType(RouteOptions.Type.FASTEST);
routePlan.setRouteOptions(routeOptions);

// 4. Select Waypoints for your routes
// START: Burnaby
routePlan.addWaypoint(new GeoCoordinate(49.276271, -123.113224));

// END: YVR Airport
routePlan.addWaypoint(new GeoCoordinate(49.1947289, -123.1762924));

// 5. Retrieve Routing information via RouteManagerListener
RouteManager.Error error =
    routeManager.calculateRoute(routePlan, routeManagerListener);
if (error != RouteManager.Error.NONE) {
    Toast.makeText(getApplicationContext(),
        "Route calculation failed with: " + error.toString(),
        Toast.LENGTH_SHORT)
    .show();
}
};
```

10. Save all files in the BasicMapSolution project by selecting **File > Save All**.

11. Press the key combination **Shift + F10** (or **Ctrl + R** on Macs) within Android Studio to run this HERE Android SDK application with route calculation functionality.

Result: your HERE Android SDK application displays a map centered on the Vancouver municipal region, with a "Get Directions" button and a text box reflecting current status. Tapping on the button triggers a route calculation for the hard-coded set of waypoints between Burnaby and YVR Airport. The route is rendered and displayed on the map if it was successful.

Chapter 3

User Guide

Topics:

- [*System Requirements*](#)
- [*Authenticating Application...*](#)
- [*Obfuscating Applications*](#)
- [*Maps*](#)
- [*Positioning*](#)
- [*Directions*](#)
- [*Places*](#)

The articles in this section provide a guide to using the HERE Android SDK.

System Requirements

- Android 4.0.3 "Ice Cream Sandwich" (API Level 15) or higher as the application Minimum API Level (`android:minSdkVersion`).
 - Android Studio 2.2 or above
 - 32MB of memory (RAM) be made available for foreground applications using the HERE SDK
 - For storage of application binaries, an additional 1MB for the HERE SDK libraries if bundled with the application should be taken into account
 - Mass storage is required for persistent storage of map data. At a minimum, 3.5MB of free space is required to be available for map data
- **Note:** HERE Android SDK does not support x86 Android devices or emulators. You should only use ARM-based devices for testing.

Authenticating Applications

Developers using the HERE SDK with their app are required to register for a set of HERE credentials and to specify these credentials (`App_Id` and `App_Code`) in their app's Android manifest XML file. Failure to do so results in blocked access to certain features and degradation in the quality of other services.

To obtain these credentials, visit the developer portal at <http://developer.here.com>.

- **Note:** Credentials are unique to your application's package. Do not reuse credentials across multiple applications.
- **Important:** When switching from an Evaluation plan to a Commercial plan, new HERE credentials must be taken into use. Applications **must not** be commercially released (such as submitted to a store) using credentials received as part of an Evaluation plan. Please contact a HERE representative for further information.

Adding Credentials to the Manifest

You can add your HERE credentials as `<meta-data/>` attributes to the `AndroidManifest.xml` file as follows:

1. In your development environment, double-click your project's `AndroidManifest.xml` file and ensure that you are viewing the file in text editor mode.
2. Within the `<application></application>` block of tags, add the following markup:

```
<meta-data android:name="com.here.android.maps.appid" android:value="YOUR_APP_ID"/>
<meta-data android:name="com.here.android.maps.apptoken" android:value="YOUR_APP_CODE"/>
```
3. Replace the `{YOUR_APP_ID}` and `{YOUR_APP_CODE}` strings with appropriate credentials for your application.

Obfuscating Applications

If you would like to use ProGuard to obfuscate your application, you must add HERE SDK-specific options (in addition to your application options) to ensure that the HERE library is not further obfuscated.

Using Android Studio

Typically, the ProGuard rules are specified through the `proguardFiles` entry inside the `app/build.gradle` file, similar to the following:

```
buildTypes {  
    release {  
        minifyEnabled false  
        proguardFiles getDefaultProguardFile('proguard-android.txt'),  
            'proguard-rules.pro'  
    }  
}
```

To add the HERE SDK-specific options, include the ProGuard configuration file (`proguard-here-sdk.txt`) that is in the HERE SDK package by appending the filename to `proguardFiles`. For example:

```
buildTypes {  
    release {  
        minifyEnabled false  
        proguardFiles getDefaultProguardFile('proguard-android.txt'),  
            'proguard-rules.pro',  
            'proguard-here-sdk.txt'  
    }  
}
```

For more information on modifying your application's ProGuard configuration, refer to the [ProGuard section](#) of the Android Developer website.

Maps

The core feature of the HERE Android SDK is Maps. The key concepts covered in this section include adding a map to an Android application, changing the location displayed by the map and its various properties. The classes covered include `MapFragment` and `Map`. `MapFragment` and `Map` are parts of a Model-View-Controller (MVC) pattern where the Model is the `Map`, and the View is the `MapFragment`. The `MapFragment` is a standard Android Fragment derived component. You can create a controller class to coordinate all interactions using custom logic.

The first step to integrate a map into an application is to insert a `MapFragment` to the view layout of the application. This is accomplished by adding `com.here.android.mpa.mapping.MapFragment` to the `Android XML` layout file as follows.

```
<!-- Example fragment. This can be integrated and annotated  
like any other android Fragment or View widget -->  
<fragment
```

```
class="com.here.android.mpa.mapping.MapFragment"
    android:id="@+id/mapfragment"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"/>
```

The MapFragment class handles all user interactions such as panning, tapping or pinching, as well as other standard HERE SDK touch gestures documented in [MapGestures](#).

Initializing MapFragment

After adding the MapFragment to the layout, the fragment must be initialized. The MapFragment initialization is processed asynchronously. During initialization, the MapEngine is initialized to create an instance of Map that is associated with the MapFragment. The MapFragment.init(OnEngineInitListener) method takes in an OnEngineInitListener input parameter to signal the caller when initialization is completed and if it was successful. The MapFragment also initializes a [MapEngine](#) instance and creates a Map object associated with the MapFragment. The following code illustrates the basic initialization flow when an Activity is created.

```
@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    // Search for the Map Fragment
    final MapFragment mapFragment = (MapFragment)
        getFragmentManager().findFragmentById(R.id.mapfragment);
    // initialize the Map Fragment and
    // retrieve the map that is associated to the fragment
    mapFragment.init(new OnEngineInitListener() {
        @Override
        public void onEngineInitializationCompleted(
            OnEngineInitListener.Error error) {
            if (error == OnEngineInitListener.Error.NONE) {
                // now the map is ready to be used
                Map map = mapFragment.getMap();
                // ...
            } else {
                System.out.println("ERROR: Cannot initialize MapFragment");
            }
        });
    });
}
```

■ **Note:** For performance reasons, com.here.android.mpa.mapping.MapFragment has set Fragment.setRetainInstance(boolean) to true, and therefore onCreate(Bundle) is not called again when Activity is re-created (for example, after a zoom-level change).

Working with Map

Once the MapFragment is initialized, you get the Map associated with the MapFragment through MapFragment.getMap(). The Map class represents the virtual model of the world in a digital format. Key attributes of the Map include the center GeoCoordinate and zoom level. For example, the following code snippet illustrates how to use Map.setCenter(GeoCoordinate, Map.Animation) to render the Map at Vancouver, Canada.

```
// map fragment has been successfully initialized
```

```
...
// now the map is ready to be used
Map map = mapFragment.getMap();

// Set the map center to Vancouver, Canada.
map.setCenter(new GeoCoordinate(49.196261,
    -123.004773), Map.Animation.NONE);
...
```

In the preceding code:

- The `GeoCoordinate` for the map center is created by a call to the new `GeoCoordinate(double, double)` constructor.
- When setting the center of a map, there is an option either to animate the change or to suppress animation by passing the constant `Map.Animation.NONE` as the relevant parameter.

Map Center and Zoom

Here are examples of setting and getting `Map` attributes:

Map Center

The center of the `Map` is a `GeoCoordinate` location that your `Map` is focused on. You can move a `Map` by redefining its center `GeoCoordinate`:

```
// Move the map to London.
map.setCenter(new GeoCoordinate(51.51,-0.11),
    Map.Animation.NONE );

// Get the current center of the Map
GeoCoordinate coordinate = map.getCenter();
```

Zoom Level

The size of the geographical area displayed by `Map` can be controlled by changing the zoom level. The zoom level ranges from `getMinZoomLevel()` to `getMaxZoomLevel()`, with the minimum value displaying the entire world. The following code sets the zoom level to the median zoom level.

```
// Get the maximum,minimum zoom level.
double maxZoom = map.getMaxZoomLevel();
double minZoom = map.getMinZoomLevel();

// Set the zoom level to the median (10).
map.setZoomLevel((maxZoom + minZoom)/2);

// Get the zoom level back
double zoom = map.getZoomLevel();
```

Animations

The map supports three types of animations when changing attributes:

- `Map.Animation.NONE`
- `Map.Animation.LINEAR`

```
// Move to Vancouver using bow animation
map.setCenter(new GeoCoordinate(49.0,-123.0),
    Map.Animation.LINEAR);
```

■ **Note:** If the map changes size or the app comes to the foreground while `Map.Animation.LINEAR` is being used in a `Map` attribute setter method, then the animation aborts, and the transition appears to fail. To avoid this behavior, use the `Map.Animation.NONE` animation type or wait until the map is stable before performing the transition operation.

MapState and Listening for Map Transform Events

`MapState` is an object that is a composite of the zoom level and center map attributes. Your application can listen for updates to the `MapState` by using an `OnTransformListener`.

Map transform events are triggered by any operation that causes the `MapState` to change. These operations include user interaction (for example, map gestures) as well as programmatic calls to the `Map` (for example, `map.setCenter(GeoCoordinate, MapAnimation)`). The `onMapTransformStart()` method is called before `MapState` begins to change, while the `onMapTransformEnd(MapState)` method is called after the `MapState` returns to a steady value. Because of this, there can be a significant amount of time between the two callbacks in cases such as animated map movement events and continuous user interaction.

The following code is an example of registering an `OnTransformListener` to listen for map transform events:

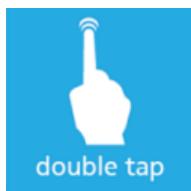
```
map.addTransformListener(new OnTransformListener() {
    @Override
    public void onMapTransformStart() {
        // map transform is about to start
    }
    @Override
    public void onMapTransformEnd(MapState mapState) {
        // map transform has come to an end
    }
});
```

If you need to update UI widgets as the `MapState` changes between these two callbacks, the recommended approach is to trigger a `Runnable` when `onMapTransformStart()` is called, which periodically checks (at no more than 30 frames per second) the current map state via `map.getMapState()` and updates the UI widgets accordingly. This `Runnable` can then be canceled upon a call to `onMapTransformEnd(MapState)`. An `Android Handler` can be used to trigger these `Runnable` objects.

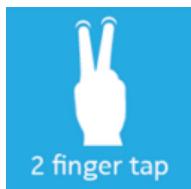
■ **Note:** Do not update UI widgets in `MapRenderListener.onPostDraw(boolean, long)`, as this method is frequently called.

Map Gestures

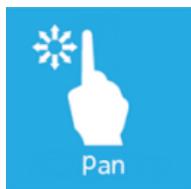
The `MapGesture` interface encapsulates all user interactions and touch gestures supported by the HERE Android SDK. The `MapGesture` associated with a particular fragment can be retrieved from `MapFragment.getMapGesture()`. The default behavior of the map for each gesture type may be used as-is, supplemented, or replaced entirely. The following table is a summary of the available gestures and their default behavior.



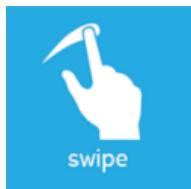
To zoom the map in a fixed amount, tap the screen twice with one finger



To zoom out a fixed amount, tap the screen with two fingers



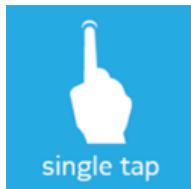
To move the map, press and hold one finger to the screen, and move it in any direction.



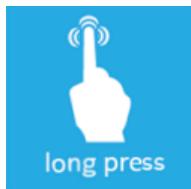
To pan the map with momentum, press and swipe one finger on the screen. The map continues to move in the same direction, and gradually slows to a stop.



To zoom in or out continuously, press and hold two fingers to the screen, and increase or decrease the distance between them



Tap the screen with one finger. This gesture does not have a predefined map action.



Press and hold one finger to the screen. This gesture does not have a predefined map action.

The OnGestureListener Interface

The `OnGestureListener` interface represents a listener to provide notification upon completion of a Map gesture event such as a single tap on a map.

For example, you can create a new `OnGestureListener()`, as illustrated below.

```
// Map gesture listener
private class MyOnGestureListener implements OnGestureListener {

    @Override
    public void onPanStart() {
    }

    @Override
    public void onPanEnd() {
    }

    @Override
    public void onMultiFingerManipulationStart() {
    }

    @Override
    public void onMultiFingerManipulationEnd() {
    }

    @Override
    public boolean onMapObjectsSelected(List<ViewObject> objects) {
        return false;
    }

    @Override
    public boolean onTapEvent(PointF p) {
        return false;
    }

    @Override
    public boolean onDoubleTapEvent(PointF p) {
        return false;
    }

    @Override
    public void onPinchLocked() {
    }

    @Override
    public boolean onPinchZoomEvent(float scaleFactor, PointF p) {
        return false;
    }

    @Override
    public void onRotateLocked() {
    }

    @Override
    public boolean onRotateEvent(float rotateAngle) {
        return false;
    }

    @Override
    public boolean onTiltEvent(float angle) {
        return false;
    }

    @Override
    public boolean onLongPressEvent(PointF p) {
        return false;
    }

    @Override
    public void onLongPressRelease() {
    }

    @Override
```

```
public boolean onTwoFingerTapEvent(PointF p) {  
    return false;  
}  
}
```

- **Note:** The `OnGestureListener` methods that mention "rotate" and "tilt", such as `onRotateEvent(float)`, are not supported. They are only defined here to maintain compatibility with the Premium Edition of the HERE SDK.

To add the listener to your map, include a call to `addOnGestureListener(OnGestureListener)` after the map fragment has been successfully initialized as follows:

```
...  
mapFragment.init(new OnEngineInitListener() {  
    @Override  
    public void onEngineInitializationCompleted(OnEngineInitListener.Error error) {  
        if (error == OnEngineInitListener.Error.NONE) {  
            // map fragment has been successfully initialized  
            mapFragment.getMapGesture().addOnGestureListener(new MyOnGestureListener());  
        }  
    }  
});  
...  
...
```

- **Note:** After you add an `OnGestureListener` to an application, remember to call `removeOnGestureListener(OnGestureListener)` when you no longer need to listen for map events to free up application resources.

The default implementation of a `OnGestureListener` does not affect any of the standard HERE SDK touch gestures. Each method within the `MyOnGestureListener` class returns a value of `false`, which stipulates that the application should not override the underlying action that a device performs upon detecting a particular gesture.

If you want to customize an action that your application performs upon detection of a particular gesture, you must include appropriate commands within a relevant method of the `MyOnGestureListener` class and return a value of `true` to override the default action, as illustrated below with revisions to the `onTwoFingerTapEvent(PointF)` method.

```
@Override  
public boolean onTwoFingerTapEvent(PointF p) {  
    // Reset the map view  
    double level = map.getMinZoomLevel() + map.getMaxZoomLevel() / 2;  
    map.setCenter(new GeoCoordinate(49.196261, -123.004773),  
    Map.Animation.NONE);  
    map.setZoomLevel(level);  
    return true;  
}
```

- **Note:** Since the `onTapEvent(PointF)` event is always triggered before the `onMapObjectsSelected(List<ViewObject>)` event, you can leverage this behavior to implement your own object selection logic. While implementing object selection, it is recommended that you use both `Map.getSelectedObject(PointF)` and `Map.getSelectedObject(ViewRect)` and combine the results, so that the user's tap input is interpreted over a larger area, rather than only a single point.

After the revision, the basic application responds to each two-finger tap gesture by returning to its initial view (the view displayed upon application launch). Other touch gestures continue to trigger standard HERE SDK actions.

Map Schemes

The HERE Android SDK provides a variety of map appearances for your application to choose from, these appearances are otherwise known as *map schemes*.

`Map.Scheme` defines visualization types that the HERE map service supports. There is a variety of map schemes available that can be used, based on the specific use case:

- Normal
- Terrain
- Satellite
- Day or Night Time

You can set a desired scheme by making a call to the `Map.setMapScheme(String)` method.

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Examples of Map Scheme

All available schemes are defined as constant strings in the `Map.Scheme` class. The following are examples of string values that you can use to set the map scheme in your application:

Figure 3: Scheme.NORMAL_DAY

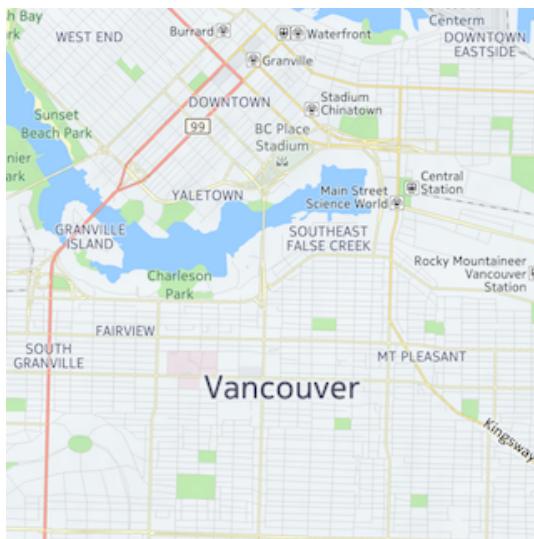


Figure 4: Scheme.SATELLITE_DAY

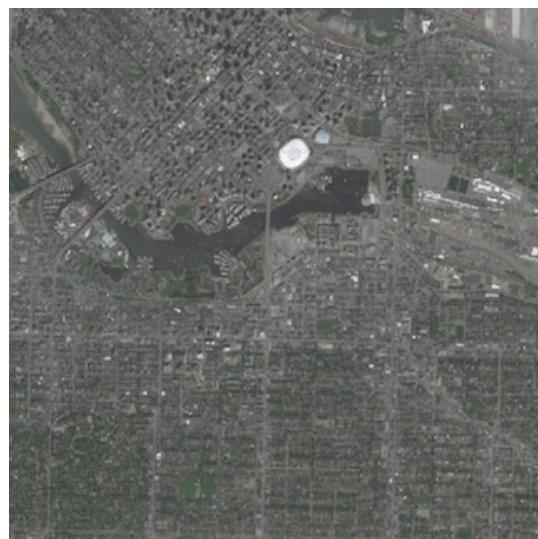
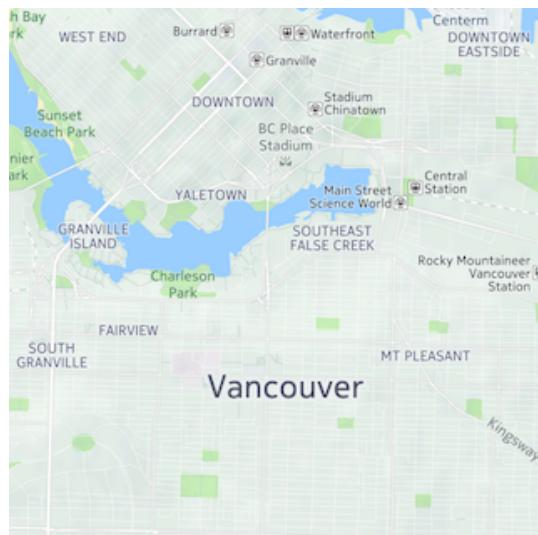


Figure 5: Scheme.HYBRID_DAY



Figure 6: Scheme.TERRAIN_DAY



Setting a Map Scheme

The following example demonstrates how to retrieve available map schemes and change the current map scheme:

```
// Array containing string values of all available map schemes
List<String> schemes = map.getMapSchemes();
// Assume to select the 2nd map scheme in the available list
map.setMapScheme(schemes.get(1));
```

Listening for MapScheme Change Events

Applications can listen for map scheme change events by way of the `Map.OnSchemeChangedListener`:

```
map.addSchemeChangedListener(new OnSchemeChangedListener() {
    @Override
    public void onMapSchemeChanged(String mapScheme) {
        // react to map scheme change here
    }
});
```

MapEngine Class

`MapEngine` is a singleton class used to manage active mapping resources for use in applications developed with the HERE SDK. `MapEngine` must be initialized before `Map` and map-related objects, such as `MapMarker` and `Places`, can be instantiated and retrieved from the API. A runtime exception occurs if `MapEngine` is not properly initialized before map-related objects are used.

Initialization

`MapEngine` must be initialized before it can be used. `MapEngine` is automatically initialized for your application by using `MapFragment`. `MapFragment` is a fragment class that applications can use as an UI module in an activity for map display. However, if your application does not use `MapFragment` classes, then the application should initialize the `MapEngine` directly before using any HERE APIs. You can do this by calling `MapEngine.init(Context, OnEngineInitListener)` as shown below:

```
MapEngine mapEngine = MapEngine.getInstance();
mapEngine.init(context, new OnEngineInitListener() {
    @Override
    public void onEngineInitializationCompleted(Error error) {
        if (error == OnEngineInitListener.Error.NONE) {
            // Post initialization code goes here
        } else {
            // handle factory initialization failure
        }
    }
});
```

If map engine initialization is in progress or has failed, calling any other HERE SDK APIs fails because invalid objects cannot be created. To avoid this problem, check for `MapEngine.isInitialized()` in your app lifecycle callbacks. For example, the following example avoids problems with using the `PositionManager` before an instance can be properly created:

```
public void onDestroy()
{
    //Set initComplete using MapEngine.isInitialized()
    if (initComplete) {
        PositioningManager.getInstance().removeListener(this);
    }
    super.onDestroy();
}
```

For examples of typical scenarios using the `MapFragment` that automatically initializes the `MapEngine`, see [Maps](#) on page 25.

Objects and Interaction

You can select `ViewObject` objects by using a single tap gesture. To enable this in your code, create an `OnGestureListener` object and pass it to `MapFragment.getMapGesture().addOnGestureListener(OnGestureListener)`. When a single tap occurs, the listener receives the `onTapEvent(PointF)` callback, and if that event is not handled, then the listener receives the `onMapObjectsSelected(List<ViewObject>)` callback. The application can then define what to do with the selected `ViewObject`.

Types of `ViewObject` objects that are selectable are defined within the `ViewObject.Type` enumeration, which includes:

- `USER_OBJECT` - an object that the application adds to a map with a `MapObject` base class (`MapPolygon` for example).
- `UNKNOWN_OBJECT` - a selectable map object that is not a `USER_OBJECT`

The `ViewObject` Abstract Class

The `ViewObject` abstract class represents the base implementation for all objects that are selectable on a `MapView` or `MapFragment`. The `MapFragment` features user-selectable objects.

Sub-classes of the `ViewObject` class include `MapObject`.

MapObject and Geo Objects

`MapObject` represents an abstract class for all map-related objects that can be added on a `Map`. The subclasses of this abstract class include:

- `MapContainer`
- `MapCircle`
- `MapPolyline`
- `MapPolygon`
- `MapRoute`
- `MapMarker`

These objects can be created by calling the appropriate constructor methods. In some cases, a geo object is required in the constructor. Geo objects (for example, `GeoPolyline` and `GeoPolygon`) are geographical data representations that act as models to `MapObjects`, which act as views. Unlike map objects, geo objects cannot be added directly to a `Map`. For more information on geo objects and creating map objects, see the API Reference.

The following code snippet demonstrates how to create a `MapPolyline` and a `GeoPolyline` object:

```
List<GeoCoordinate> testPoints = new ArrayList<GeoCoordinate>();  
testPoints.add(new GeoCoordinate(49.163, -123.137766, 10));  
testPoints.add(new GeoCoordinate(59.163, -123.137766, 10));  
testPoints.add(new GeoCoordinate(60.163, -123.137766, 10));  
GeoPolyline polyline = new GeoPolyline(testPoints);  
MapPolyline mapPolyline = new MapPolyline(polyline);
```

To add a `MapObject` to the map, use `Map.addMapObject(MapObject)` or `Map.addMapObjects(List<MapObject>)`.

MapContainer

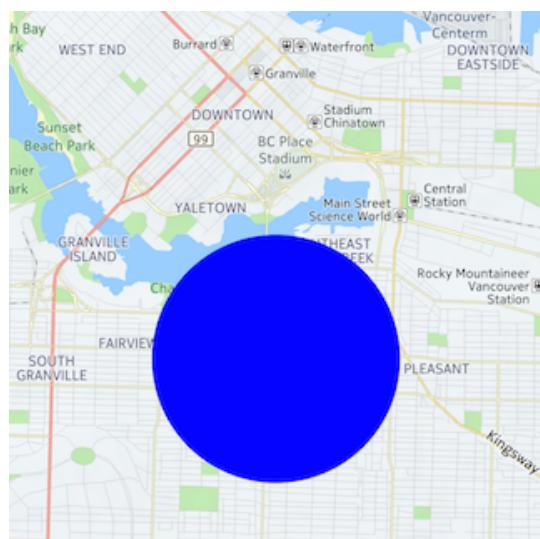
You can use `MapContainer` as a container for other `MapObject` instances. Map containers determine the stacking order of objects displayed on a map. To add a map object, call the `MapContainer.addMapObject(MapObject)` method.

Note: `MapRoute` and `MapContainer` cannot be added to a `MapContainer`.

MapCircle

A `MapCircle` represents a type of `MapObject` in the shape of a circle, with an assigned radius distance and a `GeoCoordinate` center. It can be created by calling the constructor `MapCircle(double radius, GeoCoordinate center)`.

Figure 7: A MapCircle object

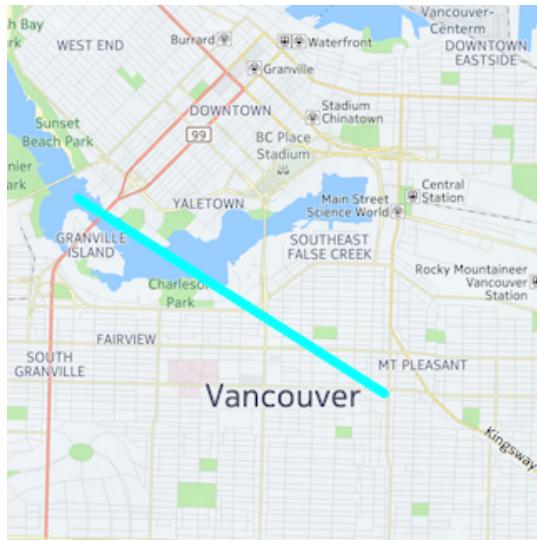


MapPolyline

A `MapPolyline` is a `MapObject` in the shape of a polyline with anchor points at any number of `GeoCoordinate` points. It can be created via a `GeoPolyline` object, which can be created by calling the `GeoPolyline(List<GeoCoordinate> points)` constructor.

■ **Note:** A MapPolyline or MapPolygon can only contain up to 65536 vertices.

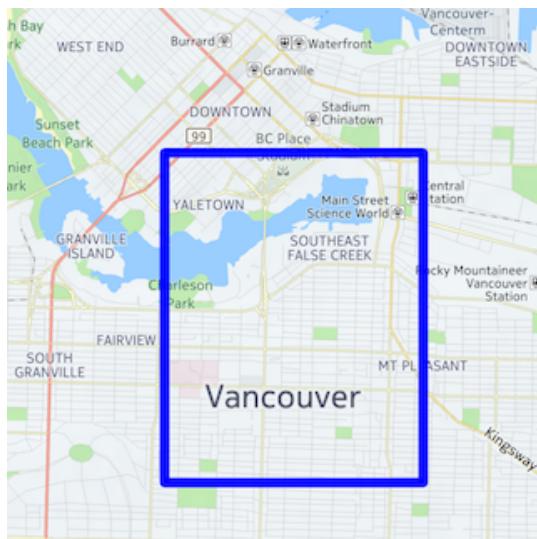
Figure 8: A MapPolyline object



MapPolygon

A MapPolygon is a MapObject in the shape of a polygon. In contrast with a MapPolyline, it is assumed that the last coordinate in the line's path is connected to the first coordinate, thereby constructing an enclosed geometry. A MapPolygon may define separate border and fill colors. To create a MapPolygon, use the constructor MapPolygon(GeoPolygon polygon). A GeoPolygon can be created by calling GeoPolygon(List<GeoCoordinate> points).

Figure 9: A MapPolygon object



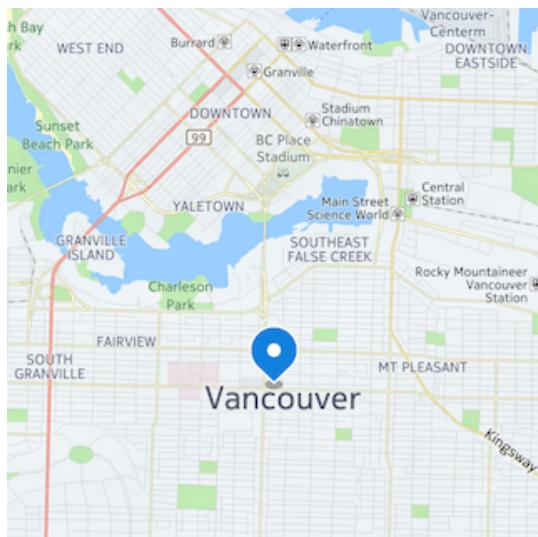
MapRoute

A MapRoute is a MapObject that displays a calculated route on a map. For more information on MapRoute, see [Routing](#).

MapMarker

A MapMarker is a MapObject that displays an icon at a geographical position on a map. You can create a MapMarker with your own custom icon by calling MapMarker(GeoCoordinate, Image).

Figure 10: A MapMarker object



MapMarker instances are always placed on top of other map objects. Refer to the diagram below for more information about z-index ordering for multiple map markers.

Figure 11: MapMarker order

The closer to the bottom of the screen it is, the closer to the viewer the marker appears



If the y position is the same, then z-index decides ordering



You can set MapMarker to be draggable by using the MapMarker.setDraggable(true) method. To listen for drag events, such as marker position changes, use MapMarker.OnDragListener.

User Interactions with MapObject

This section provides an example on handling MapObject tap events. In the following code:

- addMapObject () adds the object on the Map.
- List<ViewObject> holds the objects that have been selected in this tap event. By looping through this list of objects, your code can find the MapObject that should respond to this tap event.



Note: The `onMapObjectsSelected(List)` callback is triggered after the `onTapEvent(PointF)` callback. For more information on this, refer to [Map Gestures](#) on page 28

```
// Create a custom marker image
com.here.android.mpa.common.Image myImage =
    new com.here.android.mpa.common.Image();

try {
    myImage.setImageResource(R.drawable.my_png);
} catch (IOException e) {
    finish();
}

// Create the MapMarker
MapMarker myMapMarker =
    new MapMarker(new GeoCoordinate(LAT, LNG), myImage);

map.addMapObject(myMapMarker);

...

// Create a gesture listener and add it to the MapFragment
MapGesture.OnGestureListener listener =
    new MapGesture.OnGestureListener.OnGestureListenerAdapter() {
        @Override
        public boolean onMapObjectsSelected(List<ViewObject> objects) {
            for (ViewObject viewObj : objects) {
                if (viewObj.getBaseType() == ViewObject.Type.USER_OBJECT) {
                    if (((MapObject)viewObj).getType() == MapObject.Type.MARKER) {
                        // At this point we have the originally added
                        // map marker, so we can do something with it
                        // (like change the visibility, or more
                        // marker-specific actions)
                        ((MapObject)viewObj).setVisible(false);
                    }
                }
            }
            // return false to allow the map to handle this callback also
            return false;
        }
        ...
    };
};
```

Custom Raster Tiles

You can use the HERE Android SDK to enhance maps with custom raster tiles. Custom raster tiles are tile images that you can add to a map to customize it with enhanced information. For example, you may wish to use this feature to add heat maps over a map of New York City. You can store custom raster tile images locally or on a remote server for users to access when they navigate in a map. If the application is set to display custom raster tiles, then tiles are displayed when users view a designated geographical area at a specified zoom level or range of zoom levels.

Dividing a Map and Tile Lookup

To use your own custom raster tile images, you need to have a scheme for dividing your map according to the zoom level and map coordinates, and then provide map tiles according to this scheme. Your application must then use this scheme in the implementation of one of the following classes:

- `MapRasterTileSource` - Implement this class if you plan to fetch local tile images, create dynamic images, or if you would like to provide your own method of retrieving images from a remote server.
- `UrlMapRasterTileSourceBase` - This is a convenience child class of `MapRasterTileSource`. Implement this if you plan to fetch tile images from a remote server using a URL over HTTP.

■ **Note:** Raster tiles can be one of the following supported image types:

- PNG
- JPEG
- BMP

Once a tile source has been implemented, you can toggle its display by adding or removing it to the map using `Map.addRasterTileSource(MapRasterTileSource)` or `Map.removeRasterTileSource(MapRasterTileSource)`.

The `MapRasterTileSource` Abstract Class

`MapRasterTileSource` is the common way for you to define your raster tile source. If your application uses local tile images or remote images that require custom server authentication, then you should implement this class by defining the `hasTile()` and `getTileWithError()` methods. For example:

```
public class MyTileSource extends MapRasterTileSource {  
  
    @Override  
    public boolean hasTile(int x, int y, int zoomLevel) {  
        return true;  
    }  
  
    @Override  
    public TileResult getTileWithError(int x, int y, int zoomLevel) {  
        byte[] myImageData = null;  
        // perform tile retrieval logic such as server authentication  
        // also translate the x, y, and zoomlevel to address an image  
  
        TileResult result = new TileResult(Error.NONE, myImageData);  
        return result;  
    }  
}
```

■ **Note:** Ensure that `getTileWithError()` returns within a reasonable amount of time. If your operation takes a longer period of time, launch an asynchronous operation and return the `TileResult.Error.NOT_READY` error code while the operation is in progress.

The `UrlMapRasterTileSourceBase` Abstract Class

`UrlMapRasterTileSourceBase` is a child abstract class of `MapRasterTileSource` that you can use if you plan to fetch tile images from a remote server using image URLs. The following is a sample implementation of `UrlMapRasterTileSourceBase`. In this example, we use the `MapRasterTileSource.MapTileSystemHelper.tileXYToQuadKey()` method to address our map tiles. This helper method assumes that we are using a quadtree/quadkey scheme, where the map is divided into a quadtree (a tree data structure where each node has exactly four children) with 20 levels. Each level of this map quadtree has $(2^x)^2$ tiles, where x represents the floor function value of the current zoom level. So for level 0, there is $1 \times 1 = 1$ tile, level 1 has $2 \times 2 = 4$ tiles, level 2 has $4 \times 4 = 16$ tiles, and level 3.7 has $8 \times 8 = 64$ tiles—since the floor value of 3.7 is 3.

For more information about the quadkey/quadtreen division scheme, see the `tileXYToQuadKey()` API reference.

```
public class LiveMapRasterTileSource extends UrlMapRasterTileSourceBase {

    private final static String URL_FORMAT =
        "http://1.communitymaptiles.example.org/tilehub/live/map/png/%s";

    public LiveMapRasterTileSource() {
        // We don't want the tiles visible between these zoom levels
        hideAtZoomRange(12, 20);
        // Do not cache tiles
        setCachingEnabled(false);
    }

    // Implementation of UrlMapRasterTileSourceBase
    public String getUrl(int x, int y, int zoomLevel) {
        String url = null;

        // Utility to map the x, y coordinates easily into an equivalent
        // quadkey at a specified zoomLevel
        String quadKey =
            MapTileSystemHelper.tileXYToQuadKey(x, y, zoomLevel);

        try {
            // Append the quadkey to the URL template to get a real URL
            url = String.format(URL_FORMAT, quadKey);
        } catch (Exception ex) {
            ex.printStackTrace();
        }
    }

    return url;
}
}
```

The example above generates a quadkey from the x, y coordinates and the zoom level and appends it to the URL. However, this is server-specific and the method of converting x, y and zoom level to a URL can be done in many ways. Also, it is worth noting that tiles can be cached with `setCachingEnabled(true)`.

Caching Tiles

Tiles can be cached to the disk by calling the following:

```
// Give the tile source a custom prefix so it can be cached on the disk
MapRasterTileSource.setCachePrefix(String cache)

// Give each raster tile file an expiration time in seconds.
MapRasterTileSource.setCacheExpiration( int seconds )
```

If no expiration time is set, then the raster tiles remains on the device. We recommend that both a cache prefix and an expiration time be set.

Positioning

Basic Positioning

The HERE Android SDK provides the following interfaces for users to retrieve location updates and to display their current location on a map:

- PositioningManager
- OnPositionChangedListener
- PositionIndicator

PositioningManager Class

A PositioningManager class provides information related to the device's geographical location, like the current position and the average speed. Applications can register to receive position updates using one of the positioning mechanisms described in the `LocationMethod`:

- GPS - positioning using the real GPS available on the device.
- GPS_NETWORK - positioning is provided using a wireless network or the real GPS available on the device
- NETWORK - positioning using a wireless network.

The current status of a particular location method is represented by the `LocationStatus` value returned from the `PositioningManager.getLocationStatus(LocationMethod)` method.

PositioningManager can be accessed by calling `PositioningManager.getInstance()`.

An application can start receiving real time positioning updates by calling

`PositioningManager.start(LocationMethod)` with one of the location methods listed above and can stop the positioning updates by calling `PositioningManager.stop()`. While position updates are being received, an application can retrieve the current position of the client device via the `PositioningManager.getPosition()` method.

OnPositionChangedListener Interface

In addition to the `PositioningManager.getPosition()` method, applications can subscribe to position update notifications from the `PositioningManager` through the `PositioningManager.OnPositionChangedListener` interface. To add or remove `OnPositionChangedListener`, applications can use the following methods:

```
PositioningManager.addChangeListener(WeakReference<OnPositionChangedListener>)
```

```
PositioningManager.removeChangeListener(OnPositionChangedListener)
```

The positioning manager enhances your application with the current position of the user's device. The registration of the positioning listener should be performed after the `MapFragment`, `MapView`, or `MapEngine` is initialized as described in the following code snippet.

```
// Define positioning listener
private OnPositionChangedListener positionListener = new
    OnPositionChangedListener() {

    public void onPositionUpdated(LocationMethod method,
        GeoPosition position, boolean isMapMatched) {
```

```
// set the center only when the app is in the foreground
// to reduce CPU consumption
if (!paused) {
    map.setCenter(position.getCoordinate(),
        Map.Animation.NONE);
}
}

public void onPositionFixChanged(LocationMethod method,
    LocationStatus status) {
}

};

// Register positioning listener
PositioningManager.getInstance().addListener(
    new WeakReference<OnPositionChangedListener>(positionListener));
...
```

In order to avoid unnecessary position updates while the activity is in the background, you need to start or stop the `PositioningManager` within your activity's `onResume()` and `onPause()` methods.

```
// Set this to PositioningManager.getInstance() upon Engine Initialization
private PositioningManager posManager;
...

// Resume positioning listener on wake up
public void onResume() {
    super.onResume();
    paused = false;
    if (posManager != null) {
        posManager.start(
            PositioningManager.LocationMethod.GPS_NETWORK);
    }
}

// To pause positioning listener
public void onPause() {
    if (posManager != null) {
        posManager.stop();
    }
    super.onPause();
    paused = true;
}

// To remove the positioning listener
public void onDestroy() {
    if (posManager != null) {
        // Cleanup
        posManager.removeListener(
            positionListener);
    }
    map = null;
    super.onDestroy();
}
```

PositionIndicator Class

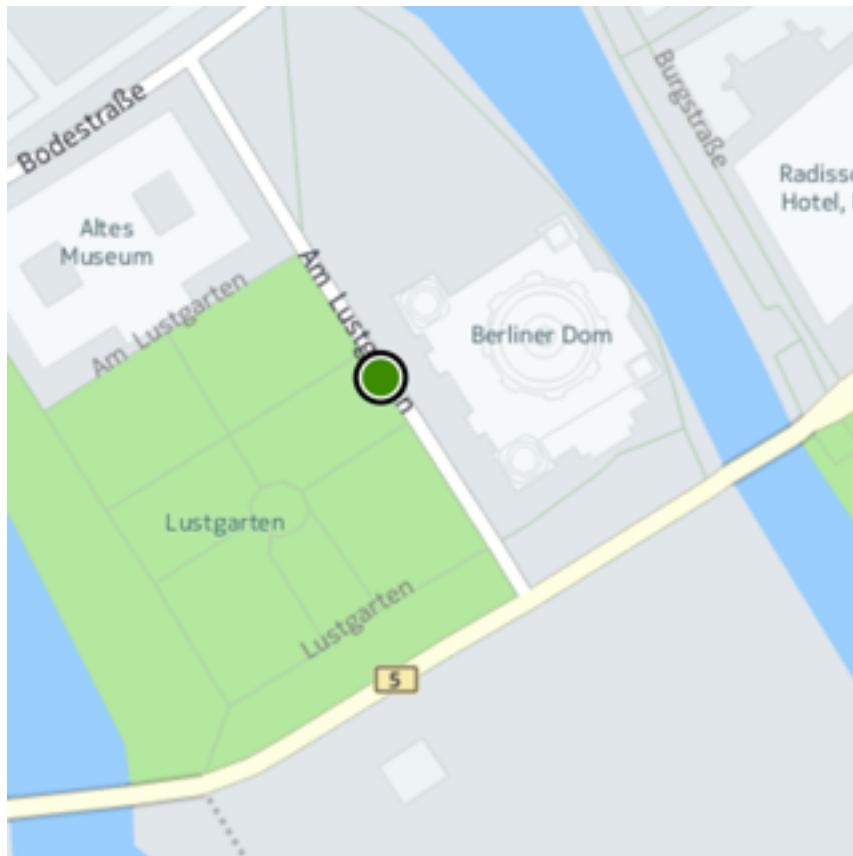
`PositionIndicator` is a special map marker object that allows the current client device position to be shown on a map. Every HERE SDK `Map` object has an integrated position indicator, set to invisible, by

default. The indicator can be retrieved and set to visible by calling `Map.getPositionIndicator()` and `PositionIndicator.setVisible()`, as follows:

```
// map fragment has been successfully initialized,  
// now the map is ready to be used  
map = mapFragment.getMap();  
  
// Display position indicator  
map.getPositionIndicator().setVisible(true);
```

By default, the position indicator is rendered as a marker surrounded by a circle, the diameter of which illustrates the accuracy of the indicated position. You can change this marker by calling `PositionIndicator.setMarker(Image)`.

Figure 12: A PositionIndicator



- **Note:** For the position indicator to stay in the center of the map and illustrate real-time updates of the device's position, it is necessary to update the map's center whenever a new location update is received.
- **Note:** `PositionIndicator` only works if the application has started the `PositioningManager`.

Directions

This section provides an overview of the Directions feature in the HERE SDK. The Directions feature allows developers to define and display routes between a start and a destination point within their application. It supports many navigation options such as toll road preference and transport type.

Route Calculation for Walking or Driving

The HERE Android SDK supports route calculation with multiple waypoints, optimized for walking or driving.

A route describes a path between at least two waypoints, the starting point and the destination, with optional intermediate waypoints in between. Applications can provide route information to users in two ways:

- A line rendered on a map that displays a connecting path between all waypoints
- Turn-by-turn directions in text format

Note:

- To use this feature, your application must include the **Gson** library (release 2.2.4 or a compatible version) on its class path.
- To support routes that are greater than 5000 km, add the `largeHeap` attribute in the `<Application>` section of `AndroidManifest.xml`. For more information, see [this article](#) on managing your app memory.

Route Calculation Classes

This section introduces the following classes that are used for route calculations:

- `RouteManager`
- `RoutePlan`
- `RouteOptions`

The `RouteManager` class is responsible for calculating a route. An application can initiate a route calculation by calling the `RouteManager.calculateRoute(RoutePlan, Listener)` method, providing options and waypoints through `RoutePlan`, and receive progress updates through the `RouteManager.Listener` instance.

`RoutePlan` is a waypoint container that is used for route calculation. A `RoutePlan` object is comprised of a list of waypoint objects and an optional `RouteOptions`. If `RouteOptions` is not specified, default values are used. You can add an individual waypoint to a `RoutePlan` by using a `GeoCoordinate`.

The `RouteOptions` class is a model of the parameters required to calculate one route. It encapsulates "building block" parameters for a route such as:

- The desired number of routes
- The direction of travel that the route should start in
- The routing type, such as fastest travel time or shortest distance
- The mode of transportation, such as by walking or driving
- The departure time
- The allowed types of route segments, such as dirt roads, highways, or ferries

The HERE SDK supports alternate routes between two waypoints. The alternate route feature allows more than one route to be returned after a route calculation. You can use the `RouteOptions` class to set the desired number of routes, and the HERE SDK then returns different routes according to this limit. Note that the first element of the returned list of `RouteResult` is the main route, and the rest of the returned routes are not listed in any specific order.

RouteResult and Route

The `RouteResult` class represents a route calculation result. Applications can retrieve a `Route` object and the corresponding set of violated routing conditions. *Violated routing options* are the conditions that a routing result was unable to adhere to. For example, after specifying a route calculation that avoids tolls and ferries, you may get a `RouteResult` that contains a `Route` object along with `RouteResult.ViolatedOption.AVOID_TOLL_ROADS`. This indicates that although a route was found, this route goes through at least one toll road—violating a condition of your route request.

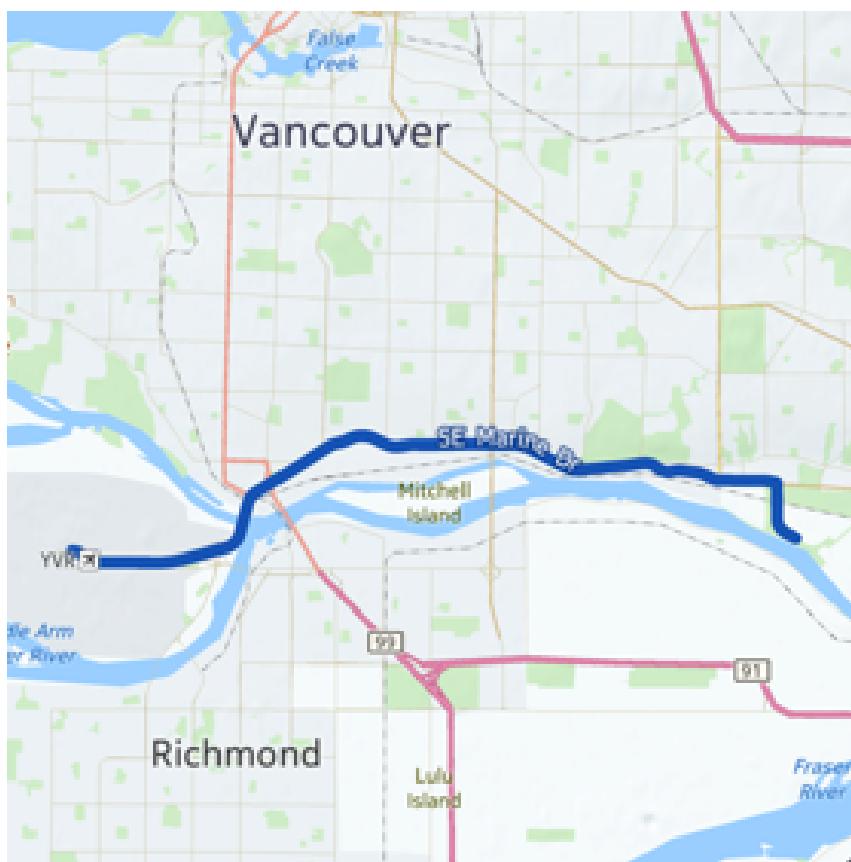
The `Route` class is a distinct calculated path connecting two or more waypoints, consisting of a list of maneuvers and route links. By using `RouteManager.calculateRoute(RoutePlan, Listener)` to trigger a route calculation, your application can use the `RouteManager.Listener` to monitor the calculation and trigger callback methods. These callback methods have parameters that include a list of the calculated `RouteResult` objects. Using these `RouteResult` objects, you can call `getRoute()` to retrieve the routes.

The MapRoute Class

The `MapRoute` class is a type of `MapObject` that displays a calculated route on a map. Typically, an application creates a `MapRoute` after a route calculation, passing the relevant `Route` object as a parameter to the `MapRoute(Route)` constructor before adding the `MapRoute` to the map by calling `Map.addMapObject(MapRoute)`.

For example, if you want to render a route that connects two waypoints (start and destination), you can add the following application logic:

Figure 13: Calculate Route



1. Declare a `RouteManager` instance.

```
// Declare the rm variable (the RouteManager)
RouteManager rm = new RouteManager();
```

2. Create a `RoutePlan` and add two `GeoCoordinate` waypoints.

```
// Create the RoutePlan and add two waypoints
RoutePlan routePlan = new RoutePlan();
routePlan.addWaypoint(new GeoCoordinate(49.1966286, -123.0053635));
routePlan.addWaypoint(new GeoCoordinate(49.1947289, -123.1762924));
```

3. Create a new `RouteOptions` object, set its `Type` and `TransportMode` values by calling appropriate `RouteOptions` methods, and then add it to `RoutePlan`.

```
// Create the RouteOptions and set its transport mode & routing type
RouteOptions routeOptions = new RouteOptions();
routeOptions.setTransportMode(RouteOptions.TransportMode.CAR);
routeOptions.setRouteType(RouteOptions.Type.FASTEST);

routePlan.setRouteOptions(routeOptions);
```

4. To make sure route calculation can handle returning a `Route` object that in turn can be used to create a `MapRoute` instance for rendering on the map, add an inner class by implementing `RouteManager.Listener` in the appropriate activity class.

```
private class RouteListener implements RouteManager.Listener {
```

```
// Method defined in Listener
public void onProgress(int percentage) {
    // Display a message indicating calculation progress
}

// Method defined in Listener
public void onCalculateRouteFinished(RouteManager.Error error, List<RouteResult> routeResult) {
    // If the route was calculated successfully
    if (error == RouteManager.Error.NONE) {
        // Render the route on the map
        MapRoute mapRoute = new MapRoute(routeResult.get(0).getRoute());
        map.addMapObject(mapRoute);
    }
    else {
        // Display a message indicating route calculation failure
    }
}
```

5. After adding the inner listener class (named `RouteListener` for this example), calculate the route by calling `RouteManager.calculateRoute(RoutePlan, Listener)` (making use of an instantiated `RouteListener` object).

```
// Calculate the route
rm.calculateRoute(routePlan, new RouteListener());
```

- **Note:** Routes with more than 100 waypoints may require significant calculation time.

Routing-related Enumerations

Route calculations make use of HERE SDK enumerations that include:

- The `Route.TrafficPenaltyMode` enum - represents values describing how the `RouteManager` should handle traffic events in a route calculation, such as `DISABLED`, `AVOID_LONG_TERM_CLOSURES`, or `OPTIMAL`.
- The `RouteOptions.Type` enum - represents values describing different routing types, such as `FASTEST`, `SHORTEST`, or `ECONOMIC`
- The `RouteOptions.TransportMode` enum - represents values describing different transport modes, such as `CAR` or `PEDESTRIAN`
- The `RouteManager.Error` enum - represents values describing possible route calculation errors, such as `NONE` or `VIOLATES_OPTIONS`
- The `RouteResult.ViolatedOption` enum - represents values describing possible route option violations, such as `AVOID_HIGHWAYS` or `AVOID_FERRIES`

Places

This section provides an overview of the Places feature in the HERE SDK. The Places feature enables developers to build rich, location-aware applications by adding point of interest search, discovery, interaction, and information retrieval.

For example, when an application submits a place discovery request using this API, the application receives a response that contains a list of links to places resources (among other information). By accessing one of the linked Place resources, the application can get detailed information about that place, including ratings, images, reviews, editorials, and owner content. This detailed place response also contains references to

other related places, allowing the application's users to discover other places relevant or related to their original search.

Geocoding and Reverse Geocoding

Geocoding and reverse geocoding APIs from the HERE Android SDK allow application developers to offer search functionality for requesting location information and structured addresses. Geocoding APIs resolve to a GeoCoordinate from a text query, while reverse geocoding APIs resolve to a geographic data, such as Address, from a GeoCoordinate. Address provides textual address information, which includes house number, street name, city, country, and district. It encompasses everything about an address or a point on the map. Location represents a physical point on the map where additional attributes can be retrieved. These additional attributes include a unique identifier, label, Address, GeoCoordinate positions, and GeoBoundingBox for the Location.

The GeocodeRequest Class

GeocodeRequest represents an extended Request. GeocodeRequest can be created using a one-box (free-formatted text) search using a combination of a text query string and geographical area arguments. The following shows the method used to create a one-box request:

```
GeocodeRequest request = new GeocodeRequest(String).setSearchArea(GeoCoordinate, int)
```

The preceding method returns a GeocodeRequest object. To begin the search, call GeocodeRequest.execute(). This method requires a ResultListener as an argument. When the search is completed, the ResultListener.onCompleted() method is called with a result status and a list of found locations.

After a request is invoked, it can be canceled using the GeocodeRequest.cancel() method, which returns true if the request was cancelled successfully. For GeocodeRequest, a list of Location objects are expected at the completion of the request.

The following code example demonstrates how to perform a GeocodeRequest:

```
// Implementation of ResultListener
class GeocodeListener implements ResultListener<List<Location>> {
    @Override
    public void onCompleted(List<Location> data, ErrorCode error) {
        if (error != ErrorCode.NONE) {
            // Handle error
            ...
        } else {
            // Process result data
            ...
        }
    }

    // Instantiate a GeoCoordinate object
    GeoCoordinate vancouver = new GeoCoordinate( 49.2849, -123.1252);

    // Example code for creating a OneBox Request
    ResultListener<List<Location>> listener = new GeocodeListener();
    GeocodeRequest request = new GeocodeRequest("Granville").setSearchArea(vancouver, 5000);
    if (request.execute(listener) != ErrorCode.NONE) {
        // Handle request error
    }
}
```

```
...  
}
```

The ReverseGeocodeRequest Class

The `ReverseGeocodeRequest` class represents an extended Request used to retrieve Address data. The request is created using a `GeoCoordinate` as shown below:

```
new ReverseGeocodeRequest (GeoCoordinate)
```

The above method returns a `ReverseGeocodeRequest` object. To invoke the request, you can then call the `execute()` method of the returned `ReverseGeocodeRequest` object and pass in a `ResultListener` to retrieve the information about the completion of the request. Once a request is invoked, the request can be cancelled via the `ReverseGeocodeRequest.cancel()` method. `cancel()` returns `true` if the request was cancelled successfully. For `ReverseGeocodeRequest`, a structured Address is expected at the completion of the request.

The following is an example of creating `ReverseGeocodeRequest` using `new ReverseGeocodeRequest (GeoCoordinate)`:

```
// Implementation of ResultListener  
class ReverseGeocodeListener implements ResultListener<Address> {  
    @Override  
    public void onCompleted(Address data, ErrorCode error) {  
        if (error != ErrorCode.NONE) {  
            // Handle error  
            ...  
        } else {  
            // Process result data  
            ...  
        }  
    }  
  
    // Instantiate a GeoCoordinate object  
    GeoCoordinate vancouver = new GeoCoordinate( 49.2849, -123.1252);  
  
    // Example code for creating ReverseGeocodeRequest  
    ResultListener<Address> listener = new ReverseGeocodeListener();  
    ReverseGeocodeRequest request = new ReverseGeocodeRequest(vancouver);  
    if (request.execute(listener) != ErrorCode.NONE) {  
        // Handle request error  
        ...  
    }  
}
```

Search and Discovery

The HERE Android SDK provides application developers the Places API, which allows places discovery and information retrieval.

Steps for performing a search

1. Implement the `ResultListener` interface to handle the completion of the search
2. Create a request and apply request options
3. Invoke the request by calling `Request.execute (ResultListener)`



4. The `ResultListener.onCompleted()` callback is triggered when the request is finished

■ **Note:** Applications that use the Places API must honor the following prescribed workflow:

1. Search
2. Request for Details
3. Perform Actions

Do not preload results linked from a response to improve performance, as doing so violates HERE's guidelines. For more information about usage restrictions, consult the [API Implementation Check List](#) in the REST HERE Places API documentation.

The Place Class

The `Place` class represents a detailed set of data about a physical place, acting as a container for various attributes, collections of media about a place, and key-value pairs of related places. A `Place` object can belong to a specific `Category`, and has attributes such as:

- A unique identifier (ID)
- A name
- A `Location` object representing the physical location of the place, including access locations
- A `List` of `Category` objects that link to the categories assigned to the place
- A URL to the icon that best represents the place
- Optional information, such as related places, user ratings, reviews, and other editorial media.

For more information, please see the API Reference.

Discovery Requests

The HERE Places Search API supports the following discovery requests:

Request	HERE SDK class	Purpose
Search	<code>SearchRequest</code>	Finds places that match user-provided search terms.
Explore	<code>ExploreRequest</code>	Finds interesting places nearby, or in the map viewport, sorted by popularity. Use this type of request if you are trying to answer the question "What are the interesting places near here?" The results may be optionally restricted to a given set of categories, which acts as a filter in terms of what places get returned.
Here	<code>HereRequest</code>	Helps users identify places at the given location by finding places of interest near a given point, sorted by distance. Use this type of request if you are trying to answer the question "What is near this location?" or "Where am I?" You can use this endpoint to implement features like "check-in" (by identifying places at the user's current position) or "tap to get more information about this place of interest". ■ Note: Normally, the closest known places are returned with the Here Discovery request, but if the uncertainty in the given position is high, then some nearer places are excluded from the result in favor of more popular places in the area of uncertainty.

The following code example demonstrates how to perform a search discovery request:

```
// Example Search request listener
class SearchRequestListener implements ResultListener<DiscoveryResultPage> {
```

```
@Override
public void onCompleted(DiscoveryResultPage data, ErrorCode error) {
    if (error != ErrorCode.NONE) {
        // Handle error
        ...
    } else {
        // Process result data
        ...
    }
}

// Create a request to search for restaurants in Seattle
try {
    GeoCoordinate seattle
    = new GeoCoordinate(47.592229, -122.315147);

    DiscoveryRequest request =
        new SearchRequest("restaurant").setSearchCenter(seattle);

    // limit number of items in each result page to 10
    request.setCollectionSize(10);

    ErrorCode error = request.execute(new SearchRequestListener());
    if( error != ErrorCode.NONE ) {
        // Handle request error
        ...
    }
} catch (IllegalArgumentException ex) {
    // Handle invalid create search request parameters
    ...
}
```

The result of a discovery request is a `DiscoveryResultPage`. The `DiscoveryResultPage` represents a paginated collection of items from which the following can be retrieved:

- Next page and previous page requests - discovery requests used to retrieve additional pages of search items
- Items for the current page - a `List<DiscoveryResult>`

When additional pages of search results are needed, retrieve and invoke the `DiscoveryRequest` returned by `DiscoveryResultPage.getNextPageRequest()`. If the next page request is null, no additional results are available.

The following is an example:

```
DiscoveryResultPage mResultPage = null;

// Example Search request listener
class SearchRequestListener implements ResultListener<DiscoveryResultPage> {

    @Override
    public void onCompleted(DiscoveryResultPage data, ErrorCode error) {
        if (error != ErrorCode.NONE) {
            // Handle error
            ...
        } else {
            // Store the last DiscoveryResultPage for later processing
            mResultPage = data;
            ...
        }
    }
}
```

```
// When the next page of results is needed...
DiscoveryRequest nextPageRequest = mResultPage.getNextPageRequest();

if (nextPageRequest != null) {
    // More data is available if the nextPageRequest is not null
    ErrorCode error = nextPageRequest.execute(new SearchRequestListener());
    if( error != ErrorCode.NONE ) {
        // Handle request error
        ...
    }
}
```

Calling `DiscoveryResultPage.getItems()`, returns a `List` containing one of the following types of objects, which are `DiscoveryResult` instances. `DiscoveryResult` is a collection of `Link` subtypes.

- `PlaceLink` - Represents discovery information about a `Place`. The `PlaceLink` contains a brief summary about a place. Details about a place are available from the `Place` that the `PlaceLink` references.
- `DiscoveryLink` - Represents a discovery-related API link used to retrieve additional `DiscoveryResultPage`. This type of `Link` can be a result item in an `Explore` or `Here` type of search. The `DiscoveryLink` references refined discovery requests resulting in more specific results. For example, the `DiscoveryLink` may link to a discovery request to search for 'Eat & Drink', 'Going Out', 'Accommodation', and so on.

Since there may be new types of `Link` items in the future, it is recommended that each type of `DiscoveryResult` be checked before it is used (as shown in the following code snippet). In the following example, it is shown how a `Place` is retrieved through a `PlaceLink`:

```
// Implement a search result listener
ResultListener<DiscoveryResultPage> searchListener = new ResultListener<DiscoveryResultPage>() {
    @Override
    public void onCompleted(DiscoveryResultPage results, ErrorCode error) {

        if (error == ErrorCode.NONE) {
            // The results is a DiscoveryResultPage which represents a
            // paginated collection of items.
            List<DiscoveryResult> items = results.getItems();

            // Iterate through the found place items.
            for (DiscoveryResult item : items) {
                // A Item can either be a PlaceLink (meta information
                // about a Place) or a DiscoveryLink (which is a reference
                // to another refined search that is related to the
                // original search; for example, a search for
                // "Leisure & Outdoor").

                if (item.getResultType() == ResultType.PLACE) {
                    PlaceLink placeLink = (PlaceLink) item;

                    // PlaceLink should be presented to the user, so the link can be
                    // selected in order to retrieve additional details about a place
                    // of interest.
                    ...

                } else if (item.getResultType() == ResultType.DISCOVERY) {
                    DiscoveryLink discoveryLink = (DiscoveryLink) item;

                    // DiscoveryLink can also be presented to the user.
                    // When a DiscoveryLink is selected, another search request should be
                    // performed to retrieve results for a specific category.
                    ...
                }
            }
        }
}
```

```
        }
    } else {
    // Handle search request error.
}
}
};

...
// Implement a Place listener for handling user interaction with a displayed PlaceLink
class PlaceListener implements ResultListener<Place> {
@Override
public void onCompleted(Place data, ErrorCode error) {
if (error != ErrorCode.NONE) {
// Handle error
...
} else {
// Present the place details to the user.
String placeName = data.getName();
List<Category> placeCategories = data.getCategories();
...
}
}

// Retrieve the place details when the user selects a displayed PlaceLink.
private void onPlaceLinkSelected(PlaceLink placeLink) {
PlaceRequest placeRequest = placeLink.getDetailsRequest();
if( placeRequest.execute(new PlaceListener()) == ErrorCode.NONE ) {
// Request successful. Additional work can be done here, however, place details will
// be returned in PlaceListener.onCompleted().
...
} else {
// Handle the error
...
}
}
```

Text AutoSuggestion Requests

The HERE Places Search API also supports text autosuggestion requests. This type of request is used for retrieving a list of suggested search terms (`AutoSuggestQuery`), instant results (`AutoSuggestPlace`), and refined search links (`AutoSuggestSearch`) that are related to a specified location context and a partial search term. For example, if you make a request with the String "rest" in Berlin, the results contain search terms such as "Restaurant", "Rest area", and "Restorf, Höhbeck, Germany".

To use text suggestions, implement a listener to handle a list of `AutoSuggest` objects and call new `TextAutoSuggestionRequest(String)` as follows:

```
// Example request listener
class AutoSuggestionQueryListener implements ResultListener<List<AutoSuggest>> {

@Override
public void onCompleted(List<AutoSuggest> data, ErrorCode error) {
for (AutoSuggest r : data) {
try {
String term = "rest";
TextAutoSuggestionRequest request = null;
request = new TextAutoSuggestionRequest(term).setSearchCenter(myMap.getCenter());
if (request.execute(new AutoSuggestionQueryListener()) !=
ErrorCode.NONE ) {
//Handle request error
}
}
}
}
}
```



```
//...
}
} catch (IllegalArgumentException ex) {
//Handle invalid create search request parameters
}
}
}
```

You can retrieve the results of a `TextAutoSuggestionRequest` by first checking the `autosuggest` object type, as shown in the following example. Note that it is possible for `AutoSuggestSearch` to contain additional paginated results through the `DiscoveryRequest` object. If the object is `AutoSuggestPlace`, you can request for more details through its `PlaceRequest` object. `AutoSuggestQuery` contains additional results through its `TextAutoSuggestionRequest` object.

```
//assume autoSuggestList contains the list of results
try {
    AutoSuggest autoSuggest = autoSuggestList.get(index);

    // set title
    String title = autoSuggest.getTitle();
    // get highlightedTitle
    String highlightedTitle = Html.fromHtml(autoSuggest.getHighlightedTitle()).toString();

    if (autoSuggest instanceof AutoSuggestPlace) {

        AutoSuggestPlace autoSuggestPlace = (AutoSuggestPlace)autoSuggest;

        // vicinity
        if (autoSuggestPlace.getVicinity() != null) {
            String vicinity = autoSuggestPlace.getVicinity();
        }

        // set category
        if (autoSuggestPlace getCategory() != null) {
            String category = autoSuggestPlace.getCategory();
        }

        // set position
        if (autoSuggestPlace.getPosition() != null) {
            String position = autoSuggestPlace.getPosition().toString();
        }

        // set boundaryBox
        if (((AutoSuggestPlace)autoSuggest).getBoundingBox() != null) {
            String boundingBox = ((AutoSuggestPlace)autoSuggest).getBoundingBox().toString();
        }
    } else if (autoSuggest instanceof AutoSuggestSearch) {

        AutoSuggestSearch autoSuggestSearch = (AutoSuggestSearch)autoSuggest;

        // set category
        if (autoSuggestSearch.getCategory() != null) {
            String category = autoSuggestSearch.getCategory();
        }

        // set position
        if (autoSuggestSearch.getPosition() != null) {
            String position = autoSuggestSearch.getPosition().toString();
        }

        // set boundaryBox
        if (autoSuggestSearch.getBoundingBox() != null) {
            String boundingBox = autoSuggestSearch.getBoundingBox().toString();
        }
    }
}
```

```
}

DiscoveryRequest myDiscoveryRequest = autoSuggestSearch.getSuggestedSearchRequest();
myDiscoveryRequest.execute(myDiscoveryResultPagelistener);
} else if (autoSuggest instanceof AutoSuggestQuery) {

    AutoSuggestQuery autoSuggestQuery = (AutoSuggestQuery)autoSuggest;

    // set completion
    if (autoSuggestQuery.getQueryCompletion() != null) {
        String completion = autoSuggestQuery.getQueryCompletion();
    }

    TextAutoSuggestionRequest myAutoSuggestionRequest = autoSuggestQuery.getRequest();
    myAutoSuggestionRequest.execute(myAutoSuggestionResultPagelistener);

}

} catch (Exception e) {
    Log.e("ERROR: ", e.getMessage());
}
```

Chapter 4

Supplemental Information

Topics:

- [*Requesting Android Permiss...*](#)
- [*Adding a MapFragment at Ru...*](#)
- [*Development Tips*](#)

This section provides supplemental information for using the HERE Android SDK.

Requesting Android Permissions

If your application supports Android 6.0 or above, add the following code in your activity file to ask the application users to grant Android permissions runtime. For more information about this requirement, see the [Android Developer documentation](#).

Figure 14: Request Location Permission

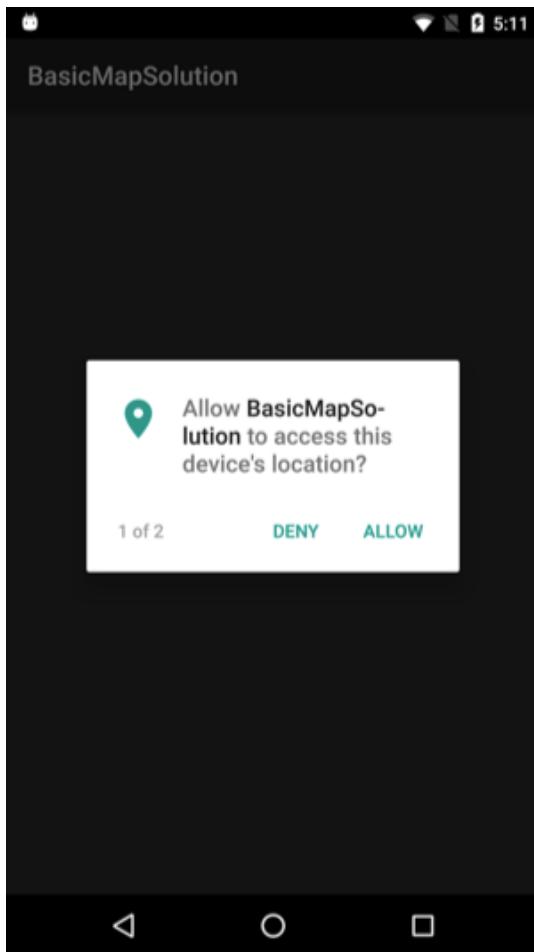
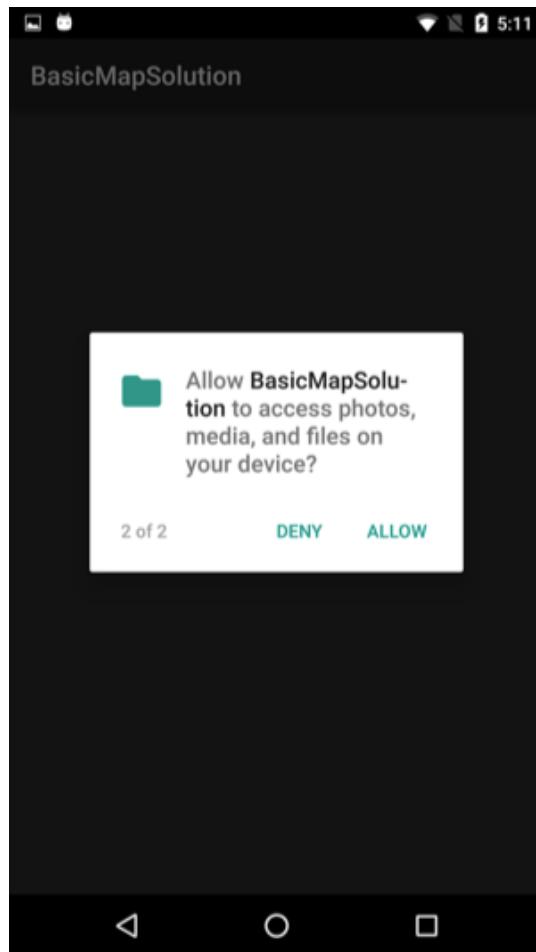


Figure 15: Request File Access Permission



1. Add the following import statements to the beginning of the file:

```
import android.content.pm.PackageManager;
import android.support.annotation.NonNull;
import android.support.v4.app.ActivityCompat;
import android.support.v4.content.ContextCompat;
import android.Manifest;
import android.widget.Toast;
import java.util.ArrayList;
import java.util.Arrays;
import java.util.List;
```

2. Add these static variables to the BasicMapActivity class:

```
/**  
 * permissions request code
```

```
/*
private final static int REQUEST_CODE_ASK_PERMISSIONS = 1;

/**
 * Permissions that need to be explicitly requested from end user.
 */
private static final String[] REQUIRED_SDK_PERMISSIONS = new String[] {
    Manifest.permission.ACCESS_FINE_LOCATION, Manifest.permission.WRITE_EXTERNAL_STORAGE };
```

3. Add the following methods to the BasicMapActivity class:

```
/** 
 * Checks the dynamically-controlled permissions and requests missing permissions from end user.
 */
protected void checkPermissions() {
    final List<String> missingPermissions = new ArrayList<String>();
    // check all required dynamic permissions
    for (final String permission : REQUIRED_SDK_PERMISSIONS) {
        final int result = ContextCompat.checkSelfPermission(this, permission);
        if (result != PackageManager.PERMISSION_GRANTED) {
            missingPermissions.add(permission);
        }
    }
    if (!missingPermissions.isEmpty()) {
        // request all missing permissions
        final String[] permissions = missingPermissions
            .toArray(new String[missingPermissions.size()]);
        ActivityCompat.requestPermissions(this, permissions, REQUEST_CODE_ASK_PERMISSIONS);
    } else {
        final int[] grantResults = new int[REQUIRED_SDK_PERMISSIONS.length];
        Arrays.fill(grantResults, PackageManager.PERMISSION_GRANTED);
        onRequestPermissionsResult(REQUEST_CODE_ASK_PERMISSIONS, REQUIRED_SDK_PERMISSIONS,
            grantResults);
    }
}

@Override
public void onRequestPermissionsResult(int requestCode, @NonNull String permissions[],
    @NonNull int[] grantResults) {
    switch (requestCode) {
        case REQUEST_CODE_ASK_PERMISSIONS:
            for (int index = permissions.length - 1; index >= 0; --index) {
                if (grantResults[index] != PackageManager.PERMISSION_GRANTED) {
                    // exit the app if one permission is not granted
                    Toast.makeText(this, "Required permission '" + permissions[index]
                        + "' not granted, exiting", Toast.LENGTH_LONG).show();
                    finish();
                    return;
                }
            }
            // all permissions were granted
            initialize();
            break;
    }
}
```

4. Finally, change the method call in `onCreate(Bundle)` from `initialize()` to `checkPermissions()` instead:

```
@Override
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    checkPermissions();
}
```

Adding a MapFragment at Runtime

Earlier tutorials in this document featured adding a `MapFragment` to an activity by editing the layout XML file. You can also add a `MapFragment` to an activity dynamically, during runtime, by performing the following steps in the `Activity` class:

1. Create a layout container:

```
final int CONTAINER_ID = 1234567;
LinearLayout layoutContainer = new LinearLayout(this);
layoutContainer.setOrientation(LinearLayout.HORIZONTAL);
layoutContainer.setId(CONTAINER_ID);
```

2. Define a map tag:

```
final String MAP_TAG = "map_tag";
```

3. Create a map fragment and add it using the fragment manager:

```
mapFragment = new MapFragment();
getFragmentManager().beginTransaction().add(layoutContainer.getId(), mapFragment,
MAP_TAG).commit();
```

4. Initialize the map fragment by implementing `OnEngineInitListener`:

```
MyOnEngineInitListener onEngineInitListener = new MyOnEngineInitListener();
mapFragment.init(this, onEngineInitListener);
```

5. Finally, show the content view:

```
setContentView(layoutContainer);
```

For more information on adding a fragment at runtime, see this article: <https://developer.android.com/training/basics/fragments/fragment-ui.html#AddAtRuntime>.

Development Tips

This section provides tips on building your application using the HERE Android SDK.

Lapsed Listeners and Garbage Collection

The HERE SDK provides a number of listener interfaces, such as `Map.OnSchemeChangedListener`, `Map.OnTransformListener`, and `MapGesture.OnGestureListener`. To use these listeners, you are required to implement and create a listener instance, then register it with another object (using a method such as `addSchemeChangedListener()`) to receive event notifications. Unfortunately, this coding pattern can also lead to the [lapsed listener problem](#), where available memory is consumed by listener objects that are not explicitly unregistered and not garbage collected.

To mitigate this problem, the HERE SDK, in some cases, accepts listener objects in `WeakReference` containers. This has the advantage of avoiding lapsed listeners, but it also means that you must be aware of registered listeners becoming garbage collected. To avoid any unintended issues with this coding pattern, be sure to retain a strong reference to your listener instances (for example, by assigning it to a class variable) if you would like to manage its garbage collection lifecycle. Listener objects are not garbage collected as long as a strong reference exists.

Working with Getters

Classes in the HERE SDK return copies of objects in its getters. For example, `MapPolyline.getPolyline()` does not return the same `GeoPolyline` instance that was used to construct the `MapPolyline` object; instead, a copy of the `GeoPolyline` is returned. Since this returned object is a copy, you cannot dynamically modify the `MapPolyline` instance by modifying this object. If you would like to make changes to `MapPolyline`, you must call `setGeoPolyline(GeoPolyline)` instead.

Map Object Limitations

The HERE SDK does not limit the number of map markers, polygons, and polylines that can be added to a map. However, rendering a large number of map objects can cause performance degradation in your application. It is recommended that you use techniques such as viewport clipping to avoid these issues.

Doze and App Standby

If you are using Android 6.0 (API level 23) or above, be aware that the *Doze* and *App Standby* features may impact your HERE SDK app by disabling network access when the device is unplugged, stationary, and has the screen off for a period of time. While the HERE Android SDK has the ability to work offline, you should design your app with these operating system features in mind.

For more information about Doze and App Standby, including how to use notifications and whitelisting to ensure your app functions properly, see the Android article, "[Optimizing for Doze and App Standby](#)".

Chapter 5

Coverage Information

The following list provides coverage information for HERE Android SDK features. Feature support in the HERE SDK may differ depending on the language and locale.

- [*Public Transit*](#)
- [*Routing*](#)
- [*Point Address*](#) (such as house numbers)
- [*Online Geocoding / Reverse Geocoding*](#)
- [*Online Places and Search*](#)
- Satellite Imagery: Worldwide

Chapter 6

API Reference

Topics:

- [*common*](#)
- [*mapping*](#)
- [*routing*](#)
- [*search*](#)

The HERE SDK for Android allows you to add HERE Maps, Routing and Search functionality to your Android applications. The following pages provide a detailed reference to the packages and classes that make up the SDK.

Open Source Software Notices

If you use the HERE SDK for Android in your application, you must embed or link to the HERE copyright and various open source software licenses. You can find a copy of these licenses in the SDK Release Notes, or in the [SDK package]/copyright.txt file.

common

The package *common* is a member of *com.here.android.mpa*.

Package Summary

common

This package includes classes, interfaces, and enumerations that are generally used by other packages in the Android SDK.

Package Details

This package includes classes, interfaces, and enumerations that are generally used by other packages in the Android SDK.

However, the following classes are key classes that serve as the entry point to services provided by our SDK:

- *MapEngine* - is the entry point for all services provided. It must be initialized before using our services.
- *PositioningManager* - is the entry point for our positioning service.
- *MapActivity* - can be used for applications that uses our headless APIs without having to manually handle the *MapEngine* setup.

For more information, please refer to our User Guide or the documentation provided by the individual classes above.

CopyrightLogoPosition

The enumeration *CopyrightLogoPosition* is a member of *com.here.android.mpa.common* .

Enumeration Summary

public final enumeration **CopyrightLogoPosition**

extends java.lang.Enum, java.lang.Object

Represents values that describe on-display view positions for the HERE copyright logo.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 1: Enum Constants in *CopyrightLogoPosition*

Fields
<pre>public static final CopyrightLogoPosition TOP_LEFT</pre> <p>The copyright logo is positioned at the top-left portion of the display view.</p>

`public static final CopyrightLogoPosition TOP_CENTER`

Fields

The copyright logo is positioned at the top-center portion of the display view.

```
public static final CopyrightLogoPosition TOP_RIGHT
```

The copyright logo is positioned at the top-right portion of the display view.

```
public static final CopyrightLogoPosition BOTTOM_CENTER
```

The copyright logo is positioned at the bottom-center portion of the display view.

Method Summary

Table 2: Methods in CopyrightLogoPosition

Methods

```
public static CopyrightLogoPosition valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static CopyrightLogoPosition[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values that describe on-display view positions for the HERE copyright logo.

Enum Constant Details

```
public static final CopyrightLogoPosition TOP_LEFT
```

The copyright logo is positioned at the top-left portion of the display view.

```
public static final CopyrightLogoPosition TOP_CENTER
```

The copyright logo is positioned at the top-center portion of the display view.

```
public static final CopyrightLogoPosition TOP_RIGHT
```

The copyright logo is positioned at the top-right portion of the display view.

```
public static final CopyrightLogoPosition BOTTOM_CENTER
```

The copyright logo is positioned at the bottom-center portion of the display view.

Method Details

```
public static CopyrightLogoPosition valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static CopyrightLogoPosition[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

GeoBoundingBox

The class *GeoBoundingBox* is a member of [com.here.android.mpa.common](#).

Class Summary

```
public final class GeoBoundingBox
```

extends java.lang.Object

Represents a rectangular area in a geographic coordinate system.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 3: Constructors in *GeoBoundingBox*

Constructors
<pre>GeoBoundingBox (GeoCoordinate topLeft, GeoCoordinate bottomRight)</pre>
Creates a <i>GeoBoundingBox</i> with specified top-left and bottom-right coordinates.
<pre>GeoBoundingBox (GeoCoordinate center, float height, float width)</pre>
Creates a <i>GeoBoundingBox</i> with a specified center and width and height in distance.

Method Summary

Table 4: Methods in *GeoBoundingBox*

Methods
<pre>public boolean contains (GeoBoundingBox bbox)</pre>
Determines whether the specified <i>GeoBoundingBox</i> is covered entirely by this <i>GeoBoundingBox</i> .
<pre>public boolean contains (GeoCoordinate coord)</pre>
Determines whether the specified <i>GeoCoordinate</i> is contained within this <i>GeoBoundingBox</i> .
<pre>public boolean equals (Object other)</pre>

Methods

```
public GeoBoundingBox expand (float latitudeMeters, float longitudeMeters)
```

Expands the *GeoBoundingBox* by a fixed distance.

```
public GeoCoordinate getBottomRight ()
```

Gets the current bottom-right coordinate of the *GeoBoundingBox*.

```
public GeoCoordinate getCenter ()
```

Gets the center *GeoCoordinate* of the *GeoBoundingBox*.

```
public double getHeight ()
```

Gets the current *GeoBoundingBox* height, in degrees.

```
public GeoCoordinate getTopLeft ()
```

Gets the current top-left coordinate of the *GeoBoundingBox*.

```
public double getWidth ()
```

Gets the current *GeoBoundingBox* width, in degrees.

```
public int hashCode ()
```

```
public boolean intersects (GeoBoundingBox bbox)
```

Determines whether the intersection of this *GeoBoundingBox* instance and the specified *GeoBoundingBox* is non-empty.

```
public boolean isEmpty ()
```

Determines whether the size of the enclosed *GeoBoundingBox* area is 0.

```
public GeoBoundingBox merge (GeoBoundingBox bbox)
```

Merges two *GeoBoundingBox* objects by returning the smallest *GeoBoundingBox* covering both this *GeoBoundingBox* and the specified *GeoBoundingBox*.

```
public static GeoBoundingBox mergeBoxes (java.util.List <GeoBoundingBox> bboxes)
```

Merges multiple *GeoBoundingBox* objects by returning the smallest *GeoBoundingBox* covering all specified *GeoBoundingBox* objects.

```
public GeoBoundingBox resizeToCenter (GeoCoordinate coord)
```

Returns a new box with the specified *GeoCoordinate* located at the center.

Class Details

Represents a rectangular area in a geographic coordinate system.

Although a bounding box is specified by its top-left and bottom-right corner, the box is not necessarily the smallest rectangle spanned by these two points. It is possible to define geobounding boxes that are wider than 180 degrees or higher than 90 degrees (e.g. by setting the longitude of the top-left corner to a bigger value than the longitude of the bottom-right corner). Please note the top-left corner's latitude must be greater than or equal to bottom-right corner's latitude. Otherwise, the bounding box will be in invalid state.

For example, a geobounding box with longitude of -180 degrees for the top-left corner and a longitude of 180 degrees for the bottom-right corner will construct an area that encircles the globe, whereas a geobounding box with the same longitude value for both corners will construct an area with a width of 0 degrees.

Constructor Details

GeoBoundingBox (GeoCoordinate topLeft, GeoCoordinate bottomRight)

Creates a *GeoBoundingBox* with specified top-left and bottom-right coordinates.

Parameters:

- **topLeft**
A *GeoCoordinate* representing the top-left corner of the bounding box
- **bottomRight**
A *GeoCoordinate* representing the bottom-right corner of the bounding box

Throws:

- **IllegalArgumentException**
If the arguments constructs an invalid *GeoBoundingBox*.

GeoBoundingBox (GeoCoordinate center, float height, float width)

Creates a *GeoBoundingBox* with a specified center and width and height in distance.

Parameters:

- **center**
A *GeoCoordinate* representing the geographical center of the bounding box.
- **height**
The geographical height in meters
- **width**
The geographical width in meters

Method Details

public boolean contains (GeoBoundingBox bbox)

Determines whether the specified *GeoBoundingBox* is covered entirely by this *GeoBoundingBox*.

Parameters:

- **bbox**
A *GeoBoundingBox* to check for containment within this *GeoBoundingBox*

Returns:

True if covered by the *GeoBoundingBox*, false otherwise

See also:

[contains\(GeoCoordinate\)](#)

```
public boolean contains (GeoCoordinate coord)
```

Determines whether the specified [GeoCoordinate](#) is contained within this [GeoBoundingBox](#).

Parameters:

- **coord**

A [GeoCoordinate](#) to check for containment within this [GeoBoundingBox](#)

Returns:

True if contained within the [GeoBoundingBox](#), false otherwise

See also:

[contains\(GeoBoundingBox\)](#)

```
public boolean equals (Object other)
```

Parameters:

- **other**

```
public GeoBoundingBox expand (float latitudeMeters, float longitudeMeters)
```

Expands the [GeoBoundingBox](#) by a fixed distance.

Parameters:

- **latitudeMeters**

The geographical height in meters to expand the [GeoBoundingBox](#)

- **longitudeMeters**

The geographical width in meters to expand the [GeoBoundingBox](#)

Returns:

The expanded bounding box.

```
public GeoCoordinate getBottomRight ()
```

Gets the current bottom-right coordinate of the [GeoBoundingBox](#).

Returns:

The current bottom-right [GeoCoordinate](#)

```
public GeoCoordinate getCenter ()
```

Gets the center [GeoCoordinate](#) of the [GeoBoundingBox](#).

Returns:

The center coordinate of the [GeoBoundingBox](#)

```
public double getHeight ()
```

Gets the current *GeoBoundingBox* height, in degrees.

Returns:

The current height

```
public GeoCoordinate getTopLeft ()
```

Gets the current top-left coordinate of the *GeoBoundingBox*.

Returns:

The current top-left *GeoCoordinate*

```
public double getWidth ()
```

Gets the current *GeoBoundingBox* width, in degrees.

Returns:

The current width

```
public int hashCode ()
```

```
public boolean intersects (GeoBoundingBox bbox)
```

Determines whether the intersection of this *GeoBoundingBox* instance and the specified *GeoBoundingBox* is non-empty.

Parameters:

- **bbox**

A *GeoBoundingBox* to check for intersection with this *GeoBoundingBox*

Returns:

True if the intersection of *GeoBoundingBox* objects is non-empty, false otherwise

```
public boolean isEmpty ()
```

Determines whether the size of the enclosed *GeoBoundingBox* area is 0.

Returns:

True if the size of the enclosed area is 0, false otherwise

```
public GeoBoundingBox merge (GeoBoundingBox bbox)
```

Merges two *GeoBoundingBox* objects by returning the smallest *GeoBoundingBox* covering both this *GeoBoundingBox* and the specified *GeoBoundingBox*.

Parameters:

- **bbox**

A *GeoBoundingBox* to merge with this *GeoBoundingBox*

Returns:

The smallest *GeoBoundingBox* that covers both of the merged *GeoBoundingBox* objects

See also:

mergeBoxes(List<GeoBoundingBox>)

```
public static GeoBoundingBox mergeBoxes (java.util.List <GeoBoundingBox>  
bboxes)
```

Merges multiple *GeoBoundingBox* objects by returning the smallest *GeoBoundingBox* covering all specified *GeoBoundingBox* objects.

Parameters:

- **bboxes**

A list of *GeoBoundingBox* objects to merge

Returns:

The smallest *GeoBoundingBox* that covers all of the merged *GeoBoundingBox* objects

See also:

merge(GeoBoundingBox)

```
public GeoBoundingBox resizeToCenter (GeoCoordinate coord)
```

Returns a new box with the specified *GeoCoordinate* located at the center.

Parameters:

- **coord**

A *GeoCoordinate* that will become the center of the new *GeoBoundingBox*

GeoCoordinate

The class *GeoCoordinate* is a member of *com.here.android.mpa.common*.

Class Summary

public final class **GeoCoordinate**

extends java.lang.Object

Represents a WGS84 coordinate with double precision.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 5: Constructors in GeoCoordinate

Constructors
GeoCoordinate (double latitude, double longitude) Creates a GeoCoordinate with specified latitude and longitude values.
GeoCoordinate (double latitude, double longitude, double altitude) Creates a GeoCoordinate with specified latitude, longitude and altitude values.
GeoCoordinate (GeoCoordinate coordinate) Creates a copy of an existing GeoCoordinate object.

Field Summary

Table 6: Fields in GeoCoordinate

Fields
public static final int UNKNOWN_ALTITUDE Definition of an unknown altitude.

Method Summary

Table 7: Methods in GeoCoordinate

Methods
public double distanceTo (GeoCoordinate coord) Calculates the distance (using the Haversine formula), as measured in meters, between this GeoCoordinate and the specified GeoCoordinate.
public boolean equals (Object other) For documentation, see <i>java.lang.Object</i>
public double getAltitude () Gets the current altitude, as measured in meters above sea level, of the GeoCoordinate (z-axis on a map).
public double getHeading (GeoCoordinate coord) Returns heading from this point to the given coordinate in degrees.
public double getLatitude ()

Methods

Gets the current latitude, as measured in degrees, of the GeoCoordinate.

```
public double getLongitude ()
```

Gets the current longitude, as measured in degrees, of the GeoCoordinate.

```
public int hashCode ()
```

```
public String toString ()
```

For documentation, see [java.lang.Object](#)

Class Details

Represents a WGS84 coordinate with double precision. A GeoCoordinate encapsulates a latitude and longitude value, plus an optional altitude value.

Constructor Details

GeoCoordinate (double latitude, double longitude)

Creates a GeoCoordinate with specified latitude and longitude values.

Parameters:

- **latitude**
Initial latitude value, in degrees, between -90.0 and 90.0 inclusive.
- **longitude**
Initial longitude value, in degrees, greater than or equal to -180.0 and less than 180.0.

See also:

[GeoCoordinate\(double, double, double\)](#)

GeoCoordinate (double latitude, double longitude, double altitude)

Creates a GeoCoordinate with specified latitude, longitude and altitude values.

Parameters:

- **latitude**
Initial latitude value, in degrees, between -90.0 and 90.0 inclusive.
- **longitude**
Initial longitude value, in degrees, greater than or equal to -180.0 and less than 180.0.
- **altitude**
Initial altitude value, in meters, between -10000.0 and 10000.0 inclusive.

Throws:

- **IllegalArgumentException**

If the arguments constructs an invalid GeoCoordinate.

See also:

[GeoCoordinate\(double, double\)](#)

[GeoCoordinate\(GeoCoordinate\)](#)

GeoCoordinate ([GeoCoordinate coordinate](#))

Creates a copy of an existing GeoCoordinate object.

Parameters:

- **coordinate**

A GeoCoordinate object used to initialize the new GeoCoordinate

See also:

[GeoCoordinate\(double, double, double\)](#)

[GeoCoordinate\(double, double\)](#)

Field Details

`public static final int UNKNOWN_ALTITUDE`

Definition of an unknown altitude.

Method Details

`public double distanceTo (GeoCoordinate coord)`

Calculates the distance (using the Haversine formula), as measured in meters, between this GeoCoordinate and the specified GeoCoordinate .

Parameters:

- **coord**

A second GeoCoordinate some distance away

Returns:

The distance between the coordinates

`public boolean equals (Object other)`

For documentation, see [java.lang.Object](#)

Parameters:

- **other**

```
public double getAltitude ()
```

Gets the current altitude, as measured in meters above sea level, of the GeoCoordinate (z-axis on a map).

Returns:

The current altitude (returns 0.0 if the altitude is unavailable)

```
public double getHeading (GeoCoordinate coord)
```

Returns heading from this point to the given coordinate in degrees.

Parameters:

- **coord**

A second GeoCoordinate to which the heading is calculated

Returns:

Heading from this coordinate to the given coordinate, in degrees, from north increasing clockwise.

```
public double getLatitude ()
```

Gets the current latitude, as measured in degrees, of the GeoCoordinate . Latitude represents the north-south coordinate, or the y-axis on a map.

Returns:

The current latitude

```
public double getLongitude ()
```

Gets the current longitude, as measured in degrees, of the GeoCoordinate . Longitude represents the east-west coordinate, or the x-axis on a map.

Returns:

The current longitude

```
public int hashCode ()
```

```
public String toString ()
```

For documentation, see [java.lang.Object](#)

GeoPolygon

The class *GeoPolygon* is a member of [com.here.android.mpa.common](#) .

Class Summary

```
public final class GeoPolygon  
extends com.here.android.mpa.common.GeoPolyline, java.lang.Object
```

Represents a GeoPolygon a polygon object defined in terms of the geographic coordinates of its vertices.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 8: Constructors in GeoPolygon

Constructors
<code>GeoPolygon ()</code> Default Constructor
<code>GeoPolygon (java.util.List <GeoCoordinate> points)</code> Constructor that creates a new instance of GeoPolygon from a list of points.

Method Summary

Table 9: Methods in GeoPolygon

Methods
<code>public boolean equals (Object other)</code> Checks whether the given GeoPolygon object is equal to that supplied by the caller.
<code>public int hashCode ()</code> Obtains the hash code for the given object.

Class Details

Represents a GeoPolygon a polygon object defined in terms of the geographic coordinates of its vertices.

The only difference between a GeoPolygon and a [GeoPolyline](#) is that the polygon represents a closed loop of points. The minimum number of points in a GeoPolygon must be three.

This class can be used with [MapPolygon](#) to render a polygon.

Constructor Details

`GeoPolygon ()`

Default Constructor

`GeoPolygon (java.util.List <GeoCoordinate> points)`

Constructor that creates a new instance of GeoPolygon from a list of points.

Parameters:

- **points**

A list of points to form the GeoPolygon.

See also:

MapPolygon

Method Details

```
public boolean equals (Object other)
```

Checks whether the given GeoPolygon object is equal to that supplied by the caller. Two objects are equal if they are both instances of GeoPolygon and the coordinates of their vertices are the same.

Parameters:

- **other**

A polygon object to compare to the given polygon.

Returns:

true if the polygons are equal, otherwise false.

```
public int hashCode ()
```

Obtains the hash code for the given object.

Returns:

A value representing the hash code.

GeoPolyline

The class *GeoPolyline* is a member of [com.here.android.mpa.common](#) .

Class Summary

```
public class GeoPolyline
```

```
extends java.lang.Object
```

Interface representing a GeoPolyline .

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 10: Constructors in GeoPolyline

Constructors
<code>GeoPolyline ()</code> Public Constructor
<code>GeoPolyline (java.util.List <GeoCoordinate> points)</code> Creates a GeoPolyline from a list of points.

Method Summary

Table 11: Methods in GeoPolyline

Methods
<code>public void add (java.util.List <GeoCoordinate> points)</code> Add a list of new points into the GeoPolyline
<code>public void add (GeoCoordinate point)</code> Add a new point into the GeoPolyline
<code>public void clear ()</code> Remove all points from the GeoPolyline
<code>public boolean contains (GeoCoordinate point)</code> Check to see if a GeoCoordinate resides within this GeoPolyline
<code>public boolean equals (Object other)</code> For documentation, see <code>java.lang.Object</code>
<code>public GeoBoundingBox getBoundingBox ()</code> Get the geographic bounding box that contains this GeoPolyline .
<code>public GeoCoordinate getNearest (GeoCoordinate point)</code> Gets the GeoCoordinate along the path of the MapPolyline that is closest to the specified GeoCoordinate .
<code>public int getNearestIndex (GeoCoordinate point)</code> Gets the index in the path array that is closest to the specified GeoCoordinate .
<code>public int getNumberOfPoints ()</code> Get the total number of points currently in the GeoPolyline .
<code>public GeoCoordinate getPoint (int index)</code> Get a point in the GeoPolyline .
<code>public int hashCode ()</code> For documentation, see <code>java.lang.Object</code>
<code>public void insert (GeoCoordinate point, int index)</code>

Methods

Insert a point into the GeoPolyline at index

```
public double length ()
```

The geographical length of this GeoPolyline.

```
public void remove (int index)
```

Remove a specific point from the GeoPolyline

Class Details

Interface representing a GeoPolyline. A GeoPolyline consists of 2 or more points. This class can be used with [MapPolyline](#) to render a polyline.

Constructor Details

GeoPolyline ()

Public Constructor

GeoPolyline (java.util.List <GeoCoordinate> points)

Creates a GeoPolyline from a list of points.

Parameters:

- **points**

A list of points to form the GeoPolyline

See also:

[MapPolyline](#)

Method Details

public void add (java.util.List <GeoCoordinate> points)

Add a list of new points into the GeoPolyline

Parameters:

- **points**

A list of {code GeoCoordinate}s to be added

public void add (GeoCoordinate point)

Add a new point into the GeoPolyline

Parameters:

- **point**

Point to be added

```
public void clear ()
```

Remove all points from the GeoPolyline

```
public boolean contains (GeoCoordinate point)
```

Check to see if a GeoCoordinate resides within this GeoPolyline

Parameters:

- **point**

The coordinate that will be used to match against the points in this GeoPolyline

Returns:

boolean true if the point is in this GeoPolyline

```
public boolean equals (Object other)
```

For documentation, see *java.lang.Object*

Parameters:

- **other**

```
public GeoBoundingBox getBoundingBox ()
```

Get the geographic bounding box that contains this GeoPolyline.

Returns:

GeoBoundingBox that contains this GeoPolyline. Can be null if the line has fewer than 2 points.

```
public GeoCoordinate getNearest (GeoCoordinate point)
```

Gets the GeoCoordinate along the path of the MapPolyline that is closest to the specified GeoCoordinate.

Parameters:

- **point**

A GeoCoordinate reference point for finding the nearest GeoCoordinate along the MapPolyline path

Returns:

The GeoCoordinate along the MapPolyline path that is closest to the specified GeoCoordinate



See also:

[getNearestIndex\(GeoCoordinate\)](#)

```
public int getNearestIndex (GeoCoordinate point)
```

Gets the index in the path array that is closest to the specified GeoCoordinate.

Parameters:

- **point**

A GeoCoordinate reference point for finding the nearest index in the path array

Returns:

The index of the path array that is closest to the specified GeoCoordinate

See also:

[getNearest\(GeoCoordinate\)](#)

```
public int getNumberOfPoints ()
```

Get the total number of points currently in the GeoPolyline.

Returns:

int total number of points

```
public GeoCoordinate getPoint (int index)
```

Get a point in the GeoPolyline.

Parameters:

- **index**

index of the point to get.

Returns:

GeoCoordinate. Returns null if the index is out of bound.

```
public int hashCode ()
```

For documentation, see [java.lang.Object](#)

```
public void insert (GeoCoordinate point, int index)
```

Insert a point into the GeoPolyline at index

Parameters:

- **point**
Point to be added
- **index**
Index to add the point into the list. `index` must be within the bounds of 0 and current count of points.

```
public double length ()
```

The geographical length of this GeoPolyline .

Returns:

double length in meters.

```
public void remove (int index)
```

Remove a specific point from the GeoPolyline

Parameters:

- **index**
index of the point to be removed.

GeoPosition

The class `GeoPosition` is a member of [com.here.android.mpa.common](#) .

Class Summary

```
public class GeoPosition
```

```
extends java.lang.Object
```

Represents position, speed, and heading information as provided by a positioning device.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 12: Constructors in `GeoPosition`

Constructors
<code>GeoPosition (GeoCoordinate coordinate)</code> Public constructor
<code>GeoPosition (GeoCoordinate coordinate, double speed, double heading, float latitudeAccuracy, float longitudeAccuracy, float altitudeAccuracy, Date timeStamp, String positionSource)</code> Public constructor

Field Summary

Table 13: Fields in GeoPosition

Fields
<pre>public static final int UNKNOWN</pre> <p>Definition of an unknown accuracy, course (heading/bearing) or speed</p>

Method Summary

Table 14: Methods in GeoPosition

Methods
<pre>public boolean equals (Object obj)</pre>
<pre>public float getAltitudeAccuracy ()</pre> <p>Gets the current altitude accuracy as measured by the enabled positioning device.</p>
<pre>public GeoCoordinate getCoordinate ()</pre> <p>Gets the current GeoCoordinate as measured by the enabled positioning device.</p>
<pre>public double getHeading ()</pre> <p>Gets the current course heading as measured by the enabled positioning device.</p>
<pre>public float getLatitudeAccuracy ()</pre> <p>Gets the current latitude accuracy as measured by the enabled positioning device.</p>
<pre>public float getLongitudeAccuracy ()</pre> <p>Gets the current longitude accuracy as measured by the enabled positioning device.</p>
<pre>public String getPositionSource ()</pre> <p>Gets the position source for the last position measured by the enabled positioning device.</p>
<pre>public double getSpeed ()</pre> <p>Gets the current speed as measured by the enabled positioning device.</p>
<pre>public Date getTimestamp ()</pre> <p>Gets the timestamp for the last position measured by the enabled positioning device.</p>
<pre>public int hashCode ()</pre>

Class Details

Represents position, speed, and heading information as provided by a positioning device.

Constructor Details

GeoPosition (GeoCoordinate coordinate)

Public constructor

Parameters:

- **coordinate**

A [GeoCoordinate](#) to be used by this object.

```
GeoPosition (GeoCoordinate coordinate, double speed, double heading, float latitudeAccuracy, float longitudeAccuracy, float altitudeAccuracy, Date timeStamp, String positionSource)
```

Public constructor

Parameters:

- **coordinate**
A [GeoCoordinate](#) to be used by this object.
- **speed**
- **heading**
- **latitudeAccuracy**
- **longitudeAccuracy**
- **altitudeAccuracy**
- **timeStamp**
- **positionSource**

Field Details

```
public static final int UNKNOWN
```

Definition of an unknown accuracy, course (heading/bearing) or speed

Method Details

```
public boolean equals (Object obj)
```

Parameters:

- **obj**

```
public float getAltitudeAccuracy ()
```

Gets the current altitude accuracy as measured by the enabled positioning device.

Returns:

The current altitude accuracy or `GeoPosition.UNKNOWN` if unknown.

```
public GeoCoordinate getCoordinate ()
```

Gets the current GeoCoordinate as measured by the enabled positioning device.

Returns:

The current GeoCoordinate

```
public double getHeading ()
```

Gets the current course heading as measured by the enabled positioning device.

Returns:

The current course heading or `GeoPosition.UNKNOWN` if unknown.

```
public float getLatitudeAccuracy ()
```

Gets the current latitude accuracy as measured by the enabled positioning device.

Returns:

The current latitude accuracy or `GeoPosition.UNKNOWN` if unknown.

```
public float getLongitudeAccuracy ()
```

Gets the current longitude accuracy as measured by the enabled positioning device.

Returns:

The current longitude accuracy or `GeoPosition.UNKNOWN` if unknown.

```
public String getPositionSource ()
```

Gets the position source for the last position measured by the enabled positioning device.

Returns:

The position source

```
public double getSpeed ()
```

Gets the current speed as measured by the enabled positioning device.

Returns:

The current speed or `GeoPosition.UNKNOWN` if unknown.

```
public Date getTimestamp ()
```

Gets the timestamp for the last position measured by the enabled positioning device.

Returns:

The timestamp

```
public int hashCode ()
```

Image

The class *Image* is a member of [com.here.android.mpa.common](#) .

Class Summary

```
public final class Image
```

```
extends java.lang.Object
```

Encapsulates an image file.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 15: Nested Classes in Image

Nested Classes
<pre>public static final enumeration Image.Type</pre> <p>This helps the application know the base type of the Image .</p>

Constructor Summary

Table 16: Constructors in Image

Constructors
<pre>Image ()</pre>

Method Summary

Table 17: Methods in Image

Methods
<pre>public Bitmap getBitmap ()</pre> <p>Creates an android.graphics.Bitmap from this <i>Image</i> if the type is <i>BITMAP</i>, null otherwise.</p>
<pre>public long getHeight ()</pre> <p>Gets the current height of the <i>Image</i> , in pixels.</p>
<pre>public Type getType ()</pre> <p>Gets the file type of this <i>Image</i>.</p>

Methods

```
public long getWidth ()
```

Gets the current width of the `Image`, in pixels.

```
public boolean isValid ()
```

Determines whether the `Image` object contains a valid image.

```
public boolean setBitmap (Bitmap bitmap)
```

Sets a `Bitmap` for the `Image`.

```
public void setImageAsset (String assetName)
```

Sets `Image` data by an image in the assets directory.

```
public void setImageData (byte[] bytes)
```

Sets an array of `byte` data for the `Image`.

```
public void setImageFile (String fileName)
```

Sets `Image` data by an image file located in the internal storage.

```
public void setImageResource (int id)
```

Sets data for the `Image` by way of an application's resource.

```
public void setLocalUrl (String localUrl)
```

Sets a local URL that the `Image` can access for an image.

Class Details

Encapsulates an image file.

Note: although BMP, JPEG and PNG data formats are supported, only basic parsing of a BMP header is done (gamma correction and color profile information are ignored), and supported BMP data formats are limited to:

- BMP v3 (standard BMP) with 24/32 bits per pixel without compression
- BMP v4/v5 (newer BMP formats) with 24/32 bits per pixel, bit fields compression and A8R8G8B8 pixel format

Constructor Details

`Image ()`

Method Details

```
public Bitmap getBitmap ()
```

Creates an `android.graphics.Bitmap` from this `Image` if the type is `BITMAP`, null otherwise.

Returns:

An `android.graphics.Bitmap` or null if this `Image` is not `BITMAP`.

```
public long getHeight ()
```

Gets the current height of the `Image`, in pixels.

Returns:

The current height

```
public Type getType ()
```

Gets the file type of this `Image`.

Returns:

The `Image.Type` for this `Image` object.

```
public long getWidth ()
```

Gets the current width of the `Image`, in pixels.

Returns:

The current width

```
public boolean isValid ()
```

Determines whether the `Image` object contains a valid image.

Returns:

True if the `Image` object is valid and can render an image, false otherwise

```
public boolean setBitmap (Bitmap bitmap)
```

Sets a `Bitmap` for the `Image`.

Parameters:

- **bitmap**

A `Bitmap` to be used by the `Image`

Returns:

True if the `Bitmap` is set successfully, false otherwise

```
public void setImageAsset (String assetName)
```

Sets `Image` data by an image in the assets directory. In particular, this calls `openFileInput(String)`.

Parameters:

- **assetName**

The name of an image in the assets directory.

Throws:

- **IOException**

on failure to read the resource.

```
public void setImageData (byte[] bytes)
```

Sets an array of byte data for the Image .

Note: JPEG and BMP are supported.

Parameters:

- **bytes**

An array of byte data containing the Image

```
public void setImageFile (String fileName)
```

Sets Image data by an image file located in the internal storage. In particular, this calls openFileInput(String).

Parameters:

- **fileName**

The name of the image file.

Throws:

- **IOException**

On failure to read the resource.

```
public void setImageResource (int id)
```

Sets data for the Image by way of an application's resource.

Parameters:

- **id**

An ID for the resource

Throws:

- **IOException**

Upon a failure to read the resource.

```
public void setLocalUrl (String localUrl)
```

Sets a local URL that the Image can access for an image.

Parameters:

- **localUrl**

The local URL that the Image uses

Type

The enumeration **Type** is a member of `com.here.android.mpa.common.Image`.

Enumeration Summary

public static final enumeration **Image.Type**

extends java.lang.Enum, java.lang.Object

This helps the application know the base type of the Image .

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 18: Enum Constants in Type

Fields
<pre>public static final Type UNKNOWN</pre> <p>Unknown image type.</p>
<pre>public static final Type BITMAP</pre> <p>Bitmap image type.</p>
<pre>public static final Type JPEG</pre> <p>JPEG image type.</p>
<pre>public static final Type PNG</pre> <p>PNG image type.</p>

Method Summary

Table 19: Methods in Type

Methods
<pre>public static Type valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static Image.Type[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

This helps the application know the base type of the `Image`.

Enum Constant Details

```
public static final Type UNKNOWN
```

Unknown image type.

```
public static final Type BITMAP
```

Bitmap image type.

```
public static final Type JPEG
```

JPEG image type.

```
public static final Type PNG
```

PNG image type.

Method Details

```
public static Type valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- `name`

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Image.Type[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

MapActivity

The class `MapActivity` is a member of `com.here.android.mpa.common`.

Class Summary

```
public class MapActivity
```

extends java.lang.Object

An activity class for managing the resource state of the [MapEngine](#).

Deprecated: As of SDK 3.3, replaced by [MapFragment](#).

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 20: Constructors in MapActivity

Constructors
MapActivity ()

Method Summary

Table 21: Methods in MapActivity

Methods
<code>protected void onCreate (Bundle savedInstanceState)</code> Called when an instance of the given class is created (map activity begins).
<code>protected void onInitialized (Error error)</code> Called when MapEngine initialization completes.
<code>protected void onPause ()</code> Called when map activity pauses (is suspended).
<code>protected void onResume ()</code> Called when the given instance of map activity resumes.

Class Details

Deprecated: As of SDK 3.3, replaced by [MapFragment](#).

An activity class for managing the resource state of the [MapEngine](#). When `onCreate(Bundle)` is called, it automatically initializes the [MapEngine](#).

Only activities that consume or use an API needs to inherit from [MapActivity](#).

This class overrides the methods `android.app.android.app.Activity#onCreate(Bundle)`, `android.app.android.app.Activity#onResume()`, and `android.app.android.app.Activity#onPause()` defined in `android.app.android.app.Activity`.

This will not work as expected if your `targetSdkVersion` is set to 23 and above running on device with Marshmallow and above. [MapActivity](#) initializes [MapEngine](#) before asking users for permissions resulting in a blank screen. Use [MapFragment](#) instead.

Constructor Details

`MapActivity ()`

Method Details

```
protected void onCreate (Bundle savedInstanceState)
```

Called when an instance of the given class is created (map activity begins). The method issues an initialization request to the [MapEngine](#). When MapEngine initialization has completed, [onInitialized\(Error\)](#) is called.

Parameters:

- **savedInstanceState**

An object representing the previous saved state of `MapActivity`; used if a new instance of this class is to be recreated from a previous session.

See also:

[onInitialized\(Error\)](#)

```
protected void onInitialized (Error error)
```

Called when MapEngine initialization completes. User of `MapActivity` class can override this to detect when or if MapEngine is ready for use.

Parameters:

- **error**

An [OnEngineInitListener.Error](#) enum value indicates if Engine initialization is successful or if an error has occurred

```
protected void onPause ()
```

Called when map activity pauses (is suspended).

```
protected void onResume ()
```

Called when the given instance of map activity resumes.

MapEngine

The class `MapEngine` is a member of [com.here.android.mpa.common](#) .

Class Summary

public final class **MapEngine**

extends java.lang.Object

MapEngine manages all mapping resources and services provided in this SDK.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 22: Methods in MapEngine

Methods
<pre>public static MapEngine getInstance ()</pre> <p>Returns the MapEngine singleton, if one has already been created.</p>
<pre>public void init (Context context, OnEngineInitListener listener)</pre> <p>Asynchronously initialize the MapEngine .</p>
<pre>public void onPause ()</pre> <p>Decrementsthe reference count of map resource usage.</p>
<pre>public void onResume ()</pre> <p>Incrementsthe reference count of map resource usage.</p>

Class Details

MapEngine manages all mapping resources and services provided in this SDK.

MapEngine must be initialized before any of the services can be used. For more information, see [init\(Context, OnEngineInitListener\)](#).

Users can maintain reference count through the use of [onPause\(\)](#) and [onResume\(\)](#) thus control when to relinquish MapEngine services.

Method Details

public static MapEngine **getInstance ()**

Returns the MapEngine singleton, if one has already been created.

Once the MapEngine instance is available, it must be initialized through one of the following methods before it can be used:

- [init\(Context, OnEngineInitListener\)](#)
- [MapFragment.init\(OnEngineInitListener\)](#)
- [MapFragment.init\(Context, OnEngineInitListener\)](#)

Returns:

MapEngine instance

```
public void init (Context context, OnEngineInitListener listener)
```

Asynchronously initialize the MapEngine . MapEngine cannot be used until it has been initialized successfully. This method is particularly useful for users of headless APIs as the MapEngine is being automatically initialized as part of the setup process of [MapFragments](#) or

Parameters:

- **context**
context to be used during initialization.
- **listener**
[OnEngineInitListener](#) to provide information when MapEngine initialization completes and if it has been successful.

See also:

[MapFragment#init\(OnEngineInitListener\)](#)

[MapFragment#init\(Context, OnEngineInitListener\)](#)

```
public void onPause ()
```

Decrements the reference count of map resource usage. When the count drops to 0 the engine will be paused. This should usually be called in an activity's `onPause` .

For users of [MapFragment](#), and [MapActivity](#) classes, it is not necessary to call `onPause()` as it is handled automatically.

```
public void onResume ()
```

Increments the reference count of map resource usage. This will open all mapping resources if the reference count becomes 1. This should usually be called in an activity's `onResume` . For users of [MapFragment](#), and [MapActivity](#) classes, it is not necessary to call `onResume()` as it is handled automatically.

OnEngineInitListener

The interface [OnEngineInitListener](#) is a member of [com.here.android.mpa.common](#) .

Interface Summary

```
public abstract interface OnEngineInitListener
```

Represents a listener to provide notification of the engine status upon completion of initialization.

[For complete information, see the section [Interface Details](#)]

See also:

[init\(Context, OnEngineInitListener\)](#)

Nested Class Summary

Table 23: Nested Classes in OnEngineInitListener

Nested Classes
<pre>public static final enumeration OnEngineInitListener.Error</pre> <p>Represents values describing initialization errors.</p>

Method Summary

Table 24: Methods in OnEngineInitListener

Methods
<pre>public abstract void onEngineInitializationCompleted (Error error)</pre> <p>A callback indicating that map engine initialization has completed.</p>

Interface Details

Represents a listener to provide notification of the engine status upon completion of initialization.

See also:

[init\(Context, OnEngineInitListener\)](#)

Method Details

```
public abstract void onEngineInitializationCompleted (Error error)
```

A callback indicating that map engine initialization has completed.

Parameters:

• **error**

If map engine initialized successfully, returns [NONE](#). Otherwise, one of the other [OnEngineInitListener.Error](#) enum values indicating the reason of factory initialization failure.

Error

The enumeration *Error* is a member of [com.here.android.mpa.common.OnEngineInitListener](#).

Enumeration Summary

```
public static final enumeration OnEngineInitListener.Error
```

extends java.lang.Enum, java.lang.Object

Represents values describing initialization errors.

[For complete information, see the section [Enumeration Details](#)]

See also:

[onEngineInitializationCompleted\(Error\)](#)

Enum Constant Summary

Table 25: Enum Constants in Error

Fields
<pre>public static final Error NONE</pre> <p>Initialization completed successfully</p>
<pre>public static final Error USAGE_EXPIRED</pre> <p>Initialization failed as the SDK is expired</p>
<pre>public static final Error MODEL_NOT_SUPPORTED</pre> <p>Initialization failed as the device's model is not supported by the SDK</p>
<pre>public static final Error DEVICE_NOT_SUPPORTED</pre> <p>Initialization failed as the device is not supported by the SDK</p>
<pre>public static final Error UNKNOWN</pre> <p>Initialization failed for unknown reasons</p>
<pre>public static final Error MISSING_APP_CREDENTIAL</pre> <p>Initialization failed due to missing App ID and Token.</p>
<pre>public static final Error BUSY</pre> <p>Initialization cannot be completed as the system is currently busy.</p>
<pre>public static final Error FILE_RW_ERROR</pre> <p>Unable to write to or read from disk cache.</p>
<pre>public static final Error INCORRECT_PASSPHRASE</pre> <p>Incorrect pass phrase to unlock the initialize the Engine</p>
<pre>public static final Error MISSING_PERMISSION</pre> <p>One of the permissions required to run the SDK is missing.</p>
<pre>public static final Error MISSING_SERVICE</pre> <p>MapService cannot not be found</p>
<pre>public static final Error MISSING_LIBRARIES</pre> <p>Missing native libraries or missing dependent java libraries which cause native libraries to not load.</p>
<pre>public static final Error OPERATION_NOT_ALLOWED</pre> <p>The required permission to initialize component is missing.</p>

Method Summary

Table 26: Methods in Error

Methods
<pre>public String getDetails ()</pre>
<pre>public String getStackTrace ()</pre>
<pre>public Throwable getThrowable ()</pre>
<pre>public static Error valueOf (String name)</pre>
<p>This method retrieves the enumeration value that matches the name specified by the caller.</p> <pre>public static OnEngineInitListener.Error[] values ()</pre>
<p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing initialization errors.

See also:

[onEngineInitializationCompleted\(Error\)](#)

Enum Constant Details

`public static final Error NONE`

Initialization completed successfully

`public static final Error USAGE_EXPIRED`

Initialization failed as the SDK is expired

`public static final Error MODEL_NOT_SUPPORTED`

Initialization failed as the device's model is not supported by the SDK

`public static final Error DEVICE_NOT_SUPPORTED`

Initialization failed as the device is not supported by the SDK

`public static final Error UNKNOWN`

Initialization failed for unknown reasons

`public static final Error MISSING_APP_CREDENTIAL`



Initialization failed due to missing App ID and Token. Please make sure the following lines are added to AndroidManifest.xml (Replace with your own appid and token pair) <lt;meta-data android:name="com.here.android.maps.appid" android:value="APPID" /> <lt;meta-data android:name="com.here.android.maps.apptoken" android:value="TOKEN" />

`public static final Error BUSY`

Initialization cannot be completed as the system is currently busy. User should check again later.

`public static final Error FILE_RW_ERROR`

Unable to write to or read from disk cache.

`public static final Error INCORRECT_PASSPHRASE`

Incorrect pass phrase to unlock the initialize the Engine

`public static final Error MISSING_PERMISSION`

One of the permissions required to run the SDK is missing. This refers to android application permission.

`public static final Error MISSING_SERVICE`

MapService cannot not be found

`public static final Error MISSING_LIBRARIES`

Missing native libraries or missing dependent java libraries which cause native libraries to not load.

`public static final Error OPERATION_NOT_ALLOWED`

The required permission to initialize component is missing.

Method Details

`public String getDetails ()`

Returns:

More details about the error and tips for the possible solution.

`public String getStackTrace ()`

Returns:

Stack trace of the associated Throwable object, useful for troubleshooting.

```
public Throwable getThrowable ()
```

Returns:

Throwable associated with the error.

```
public static Error valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static OnEngineInitListener.Error[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

PositioningManager

The class *PositioningManager* is a member of [com.here.android.mpa.common](#).

Class Summary

```
public final class PositioningManager
```

```
extends java.lang.Object
```

Represents a manager for information received from positioning devices, such as updates to the current position and the average speed.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 27: Nested Classes in PositioningManager

Nested Classes
<pre>public static final enumeration PositioningManager.LocationMethod</pre> <p>Represents values describing the location method.</p>
<pre>public static final enumeration PositioningManager.LocationStatus</pre> <p>Represents values describing the location status of a particular location method.</p>

Nested Classes

```
public static abstract interface PositioningManager.OnPositionChangedListener
```

Represents an interface for position update listeners.

Method Summary

Table 28: Methods in PositioningManager

Methods
<pre>public void addListener (java.lang.ref.WeakReference <OnPositionChangedListener> listener)</pre> <p>Adds a <i>PositioningManager.OnPositionChangedListener</i> to the PositioningManager.</p>
<pre>public double getAverageSpeed ()</pre> <p>Gets the average speed of travel, in meters per second.</p>
<pre>public static PositioningManager getInstance ()</pre> <p>Get access to the PositioningManager Singleton</p>
<pre>public GeoPosition getLastKnownPosition ()</pre> <p>Returns the last known (cached) position from the best available provider.</p>
<pre>public LocationMethod getLocationMethod ()</pre> <p>Gets the method type used to determine positioning.</p>
<pre>public LocationStatus getLocationStatus (LocationMethod method)</pre> <p>Gets the status for a specified LocationMethod.</p>
<pre>public GeoPosition getPosition ()</pre> <p>Gets the <i>GeoPosition</i> for the current <i>PositioningManager.LocationMethod</i> if available.</p>
<pre>public boolean hasValidPosition ()</pre> <p>Determines whether the current position for the current active <i>PositioningManager.LocationMethod</i> is valid.</p>
<pre>public boolean hasValidPosition (LocationMethod method)</pre> <p>Determines whether the current position for the specified LocationMethod is valid.</p>
<pre>public boolean isActive ()</pre> <p>Determines whether the PositioningManager is active and whether position updates are being received.</p>
<pre>public void removeListener (OnPositionChangedListener listener)</pre> <p>Removes a <i>PositioningManager.OnPositionChangedListener</i> from the PositioningManager.</p>
<pre>public boolean start (LocationMethod method)</pre> <p>Starts receiving position updates from the positioning device.</p>
<pre>public void stop ()</pre> <p>Stops receiving position updates from the positioning device.</p>

Class Details

Represents a manager for information received from positioning devices, such as updates to the current position and the average speed.

Method Details

```
public void addListener (java.lang.ref.WeakReference<OnPositionChangedListener> listener)
```

Adds a *PositioningManager.OnPositionChangedListener* to the PositioningManager.

Parameters:

- **listener**

A OnPositionChangedListener to add

See also:

[removeListener\(OnPositionChangedListener\)](#)

```
public double getAverageSpeed ()
```

Gets the average speed of travel, in meters per second.

Returns:

The average speed

```
public static PositioningManager getInstance ()
```

Get access to the PositioningManager Singleton

Returns:

PositioningManager instance

```
public GeoPosition getLastKnownPosition ()
```

Returns the last known (cached) position from the best available provider. This is useful if there is no valid device position available (i.e. [hasValidPosition\(\)](#) returns false). If [hasValidPosition\(\)](#) returns true, please use the [getPosition\(\)](#) API.

Returns:

Last known position from the best available provider.

See also:

[getPosition\(\)](#)

```
public LocationMethod getLocationMethod ()
```



Gets the method type used to determine positioning.

Returns:

The `LocationMethod`

```
public LocationStatus getLocationStatus (LocationMethod method)
```

Gets the status for a specified `LocationMethod`.

Parameters:

- `method`

A `LocationMethod` used to determine the location status

Returns:

The status of the specified `LocationMethod`

```
public GeoPosition getPosition ()
```

Gets the `GeoPosition` for the current `PositioningManager.LocationMethod` if available.

Availability of a position can be checked by way of the `hasValidPosition()` method, if that method returns false, the best available cached position can be obtained using the `getLastKnownPosition()` API.

The position returned is determined by the following criteria:

Returns:

The current `GeoPosition`

See also:

`getLastKnownPosition()`

```
public boolean hasValidPosition ()
```

Determines whether the current position for the current active `PositioningManager.LocationMethod` is valid.

Returns:

True if the position is valid, false otherwise

See also:

`hasValidPosition(LocationMethod)`

```
public boolean hasValidPosition (LocationMethod method)
```

Determines whether the current position for the specified `LocationMethod` is valid.

Parameters:

- `method`

A LocationMethod to check for a valid position

Returns:

True if the position is valid, false otherwise

See also:

[hasValidPosition\(\)](#)

```
public boolean isActive ()
```

Determines whether the PositioningManager is active and whether position updates are being received.

Returns:

True if the PositioningManager is actively receiving position updates, false otherwise

```
public void removeListener (OnPositionChangedListener listener)
```

Removes a [PositioningManager.OnPositionChangedListener](#) from the PositioningManager .

Parameters:

- **listener**

A OnPositionChangedListener to remove

See also:

[addListener\(WeakReference<OnPositionChangedListener>\)](#)

```
public boolean start (LocationMethod method)
```

Starts receiving position updates from the positioning device.

Parameters:

- **method**

A LocationMethod used to provide position updates

Returns:

True if position updates have started being received from the positioning device, false otherwise

```
public void stop ()
```

Stops receiving position updates from the positioning device.

LocationMethod

The enumeration `LocationMethod` is a member of `com.here.android.mpa.common.PositioningManager`.

Enumeration Summary

public static final enumeration **PositioningManager.LocationMethod**

extends java.lang.Enum, java.lang.Object

Represents values describing the location method.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 29: Enum Constants in LocationMethod

Fields
<pre>public static final LocationMethod NONE</pre> <p>Device positioning is not active.</p>
<pre>public static final LocationMethod GPS</pre> <p>Positioning is provided using a GPS device.</p>
<pre>public static final LocationMethod NETWORK</pre> <p>Positioning is provided using a wireless network.</p>
<pre>public static final LocationMethod GPS_NETWORK</pre> <p>Positioning is provided using a wireless network, or a GPS device, or both.</p>

Method Summary

Table 30: Methods in LocationMethod

Methods
<pre>public static LocationMethod valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static PositioningManager.LocationMethod[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing the location method.

Enum Constant Details

public static final LocationMethod **NONE**

Device positioning is not active.

```
public static final LocationMethod GPS
```

Positioning is provided using a GPS device.

```
public static final LocationMethod NETWORK
```

Positioning is provided using a wireless network.

```
public static final LocationMethod GPS_NETWORK
```

Positioning is provided using a wireless network, or a GPS device, or both.

Method Details

```
public static LocationMethod valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static PositioningManager.LocationMethod[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

LocationStatus

The enumeration *LocationStatus* is a member of *com.here.android.mpa.common.PositioningManager*.

Enumeration Summary

```
public static final enumeration PositioningManager.LocationStatus
```

```
extends java.lang.Enum, java.lang.Object
```

Represents values describing the location status of a particular location method.

[For complete information, see the section *Enumeration Details*]

See also:

PositioningManager.LocationMethod

Enum Constant Summary

Table 31: Enum Constants in LocationStatus

Fields
<pre>public static final LocationStatus OUT_OF_SERVICE</pre> <p>The device is disabled.</p>
<pre>public static final LocationStatus TEMPORARILY_UNAVAILABLE</pre> <p>The device is enabled, but without a location fix.</p>
<pre>public static final LocationStatus AVAILABLE</pre> <p>The device is enabled with a GPS location fix.</p>

Method Summary

Table 32: Methods in LocationStatus

Methods
<pre>public static LocationStatus valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static PositioningManager.LocationStatus[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing the location status of a particular location method.

See also:

PositioningManager.LocationMethod

Enum Constant Details

```
public static final LocationStatus OUT_OF_SERVICE
```

The device is disabled.

```
public static final LocationStatus TEMPORARILY_UNAVAILABLE
```

The device is enabled, but without a location fix.

```
public static final LocationStatus AVAILABLE
```

The device is enabled with a GPS location fix.

Method Details

```
public static LocationStatus valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static PositioningManager.LocationStatus[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

OnPositionChangedListener

The interface *OnPositionChangedListener* is a member of
com.here.android.mpa.common.PositioningManager.

Interface Summary

```
public static abstract interface PositioningManager.OnPositionChangedListener
```

Represents an interface for position update listeners.

[For complete information, see the section [Interface Details](#)]

See also:

[addListener\(WeakReference<OnPositionChangedListener>\)](#)

[removeListener\(OnPositionChangedListener\)](#)

Method Summary

Table 33: Methods in OnPositionChangedListener

Methods
<pre>public abstract void onPositionFixChanged (LocationMethod method, LocationStatus status)</pre> <p>A callback indicating that the position fix has changed.</p>
<pre>public abstract void onPositionUpdated (LocationMethod method, GeoPosition position, boolean isMapMatched)</pre> <p>A callback indicating that the position has been updated.</p>

Interface Details

Represents an interface for position update listeners.

See also:

```
addListener(WeakReference<OnPositionChangedListener>)
removeListener(OnPositionChangedListener)
```

Method Details

```
public abstract void onPositionFixChanged (LocationMethod method,
LocationStatus status)
```

A callback indicating that the position fix has changed.

Parameters:

- **method**
A LocationMethod providing the status update (GPS or Network)
- **status**
A LocationStatus representing the updated positioning status

```
public abstract void onPositionUpdated (LocationMethod method, GeoPosition
position, boolean isMapMatched)
```

A callback indicating that the position has been updated.

Parameters:

- **method**
A LocationMethod providing the position update (GPS or Network)
- **position**
A GeoPosition representing the updated position. The position can return null if the MapsEngine has not been initialized.
- **isMapMatched**
A boolean stating if the position is map matched or not. Map matching approximates user coordinates to the nearest road or navigation route If the value is false then it means an unmatched(raw) position is received. This SDK always returns false.

RoadElement

The class *RoadElement* is a member of [com.here.android.mpa.common](#) .

Class Summary

```
public class RoadElement
```

```
extends java.lang.Object
```

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 34: Nested Classes in RoadElement

Nested Classes
<pre>public static final enumeration RoadElement.Attribute</pre> <p>Defined values for different road attributes</p>
<pre>public static final enumeration RoadElement.FormOfWay</pre> <p>Form of Way Types</p>
<pre>public static final enumeration RoadElement.PluralType</pre> <p>Plural type identifies when a Junction is made up of multiple Road Elements.</p>

Method Summary

Table 35: Methods in RoadElement

Methods
<pre>public boolean equals (Object obj)</pre>
<pre>public java.util.EnumSet <Attribute> getAttributes ()</pre> <p>Gets the road attributes.</p>
<pre>public int getAverageSpeed ()</pre> <p>Gets the average speed of the road element.</p>
<pre>public FormOfWay getFormOfWay ()</pre> <p>Gets the form of way.</p>
<pre>public java.util.List <GeoCoordinate> getGeometry ()</pre>
<pre>public double getGeometryLength ()</pre> <p>Returns the length of the polyline associated with this RoadElement in meters.</p>
<pre>public int getNumberOfLanes ()</pre> <p>Gets number of lanes in this road element.</p>
<pre>public PluralType getPluralType ()</pre> <p>Gets the plural type of the road element.</p>
<pre>public String getRoadName ()</pre> <p>Gets the name of the road element.</p>
<pre>public String getRouteName ()</pre> <p>Gets the route name of the road element.</p>
<pre>public float getSpeedLimit ()</pre> <p>Gets the speed limit.</p>
<pre>public Date getStartTime ()</pre>

Methods

Gets the (estimated) time at which this road element starts.

```
public int hashCode ()
```

```
public boolean isPedestrian ()
```

Checks, if the road is allowed only for pedestrians.

```
public boolean isPlural ()
```

Tests if the road element is plural.

Class Details

Method Details

```
public boolean equals (Object obj)
```

Parameters:

- `obj`

```
public java.util.EnumSet <Attribute> getAttributes ()
```

Gets the road attributes.

Returns:

Set of roadAttributes

See also:

[RoadElement.Attribute](#)

```
public int getAverageSpeed ()
```

Gets the average speed of the road element.

Returns:

the average speed in m/s or 0 if the information is not available.

```
public FormOfWay getFormOfWay ()
```

Gets the form of way.

Returns:

the form of way of the road.

See also:

[RoadElement.FormOfWay](#)

```
public java.util.List <GeoCoordinate> getGeometry ()
```

```
public double getGeometryLength ()
```

Returns the length of the polyline associated with this RoadElement in meters.

Returns:

length of polyline for this RoadElement in meters.

```
public int getNumberOfLanes ()
```

Gets number of lanes in this road element.

Returns:

the number of lanes in this road element.

```
public PluralType getPluralType ()
```

Gets the plural type of the road element.

Returns:

The plural type of the road element.

See also:

RoadElement.PluralType

```
public String getRoadName ()
```

Gets the name of the road element. The method returns an empty string if the name is unknown.

Returns:

the name of the road.

```
public String getRouteName ()
```

Gets the route name of the road element. The route name is a short label for the road, for example I5 for the Interstate 5 in the US. The method returns an empty string if the route name is unknown.

Returns:

the route name of the road element.

```
public float getSpeedLimit ()
```

Gets the speed limit.

Returns:

the speed limit in m/s or 0 if the information is not available.

```
public Date getStartTime ()
```

Gets the (estimated) time at which this road element starts. If no departure time was set for the [RouteOptions](#) associated with this road element, than the time is relative to the system time when the route calculation took place. Otherwise, the times are relative to the specified departure time.

Returns:

The start time, or `null` if not available

See also:

[setTime\(Date, TimeType\)](#)

```
public int hashCode ()
```

```
public boolean isPedestrian ()
```

Checks, if the road is allowed only for pedestrians.

Returns:

true, if road is allowed only for pedestrians, otherwise false.

```
public boolean isPlural ()
```

Tests if the road element is plural.

Returns:

true if the road element is plural.

Attribute

The enumeration `Attribute` is a member of `com.here.android.mpa.common.RoadElement`.

Enumeration Summary

```
public static final enumeration RoadElement.Attribute
```

```
extends java.lang.Enum, java.lang.Object
```

Defined values for different road attributes

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 36: Enum Constants in Attribute

Fields
public static final Attribute DIR_NO_CARS Road direction.
public static final Attribute DIR_FORWARD
public static final Attribute DIR_BACKWARD
public static final Attribute DIR_BOTH
public static final Attribute DIRT_ROAD Road type.
public static final Attribute USAGE_FEE_REQUIRED
public static final Attribute CARPOOL
public static final Attribute URBAN
public static final Attribute TOLLROAD
public static final Attribute NO_THROUGH_TRAFFIC
public static final Attribute TUNNEL
public static final Attribute EXPLICATION
public static final Attribute SLIPROAD
public static final Attribute HIGHWAY
public static final Attribute UNDER_CONSTRUCTION
public static final Attribute HAS_LANE_DIR
public static final Attribute HAS_LANE_EXIT
public static final Attribute FERRY
public static final Attribute CAR_SHUTTLE_TRAIN

Method Summary

Table 37: Methods in Attribute

Methods
public static Attribute valueOf (String name) This method retrieves the enumeration value that matches the name specified by the caller.
public static RoadElement.Attribute[] values () This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Defined values for different road attributes

Enum Constant Details

```
public static final Attribute DIR_NO_CARS
```

Road direction.

```
public static final Attribute DIR_FORWARD
```

```
public static final Attribute DIR_BACKWARD
```

```
public static final Attribute DIR_BOTH
```

```
public static final Attribute DIRT_ROAD
```

Road type.

```
public static final Attribute USAGE_FEE_REQUIRED
```

```
public static final Attribute CARPOOL
```

```
public static final Attribute URBAN
```

```
public static final Attribute TOLLROAD
```

```
public static final Attribute NO_THROUGH_TRAFFIC
```

```
public static final Attribute TUNNEL
```

```
public static final Attribute EXPLICATION
```

```
public static final Attribute SLIPROAD
```

```
public static final Attribute HIGHWAY  
  
public static final Attribute UNDER_CONSTRUCTION  
  
public static final Attribute HAS_LANE_DIR  
  
public static final Attribute HAS_LANE_EXIT  
  
public static final Attribute FERRY  
  
public static final Attribute CAR_SHUTTLE_TRAIN
```

Method Details

```
public static Attribute valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RoadElement.Attribute[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

FormOfWay

The enumeration *FormOfWay* is a member of *com.here.android.mpa.common.RoadElement*.

Enumeration Summary

```
public static final enumeration RoadElement.FormOfWay
```

```
extends java.lang.Enum, java.lang.Object
```

Form of Way Types

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 38: Enum Constants in FormOfWay

Fields
public static final FormOfWay UNDEFINED
public static final FormOfWay MOTORWAY
public static final FormOfWay MULTI_CARRIAGEWAY
public static final FormOfWay SINGLE_CARRIAGEWAY
public static final FormOfWay ROUNDABOUT
public static final FormOfWay SPECIAL_TRAFFIC FIGURE
public static final FormOfWay SLIPROAD
public static final FormOfWay PEDESTRIAN_ZONE
public static final FormOfWay PEDESTRIAN_WALKWAY
public static final FormOfWay SERVICE_ACCESS_PARKING
public static final FormOfWay SERVICE_ACCESS_OTHER
public static final FormOfWay SERVICE_ROAD
public static final FormOfWay ETA_PARKING_PLACE
public static final FormOfWay ETA_PARKING_BUILDING
public static final FormOfWay ETA_UNSTRUCTURED_TRAFFIC_SQUARE
public static final FormOfWay ROAD_FOR_AUTHORITIES

Method Summary

Table 39: Methods in FormOfWay

Methods
public static FormOfWay valueOf (String name) This method retrieves the enumeration value that matches the name specified by the caller.
public static RoadElement.FormOfWay[] values () This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Form of Way Types

Enum Constant Details

public static final FormOfWay UNDEFINED

```
public static final FormOfWay MOTORWAY

public static final FormOfWay MULTI_CARRIAGEWAY

public static final FormOfWay SINGLE_CARRIAGEWAY

public static final FormOfWay ROUNDABOUT

public static final FormOfWay SPECIAL_TRAFFIC FIGURE

public static final FormOfWay SLIPROAD

public static final FormOfWay PEDESTRIAN_ZONE

public static final FormOfWay PEDESTRIAN_WALKWAY

public static final FormOfWay SERVICE_ACCESS_PARKING

public static final FormOfWay SERVICE_ACCESS_OTHER

public static final FormOfWay SERVICE_ROAD

public static final FormOfWay ETA_PARKING_PLACE

public static final FormOfWay ETA_PARKING_BUILDING

public static final FormOfWay ETA_UNSTRUCTURED_TRAFFIC_SQUARE

public static final FormOfWay ROAD_FOR_AUTHORITIES
```

Method Details

```
public static FormOfWay valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RoadElement.FormOfWay[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

PluralType

The enumeration *PluralType* is a member of *com.here.android.mpa.common.RoadElement*.

Enumeration Summary

```
public static final enumeration RoadElement.PluralType
```

```
extends java.lang.Enum, java.lang.Object
```

Plural type identifies when a Junction is made up of multiple Road Elements.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 40: Enum Constants in PluralType

Fields
<pre>public static final PluralType NONE</pre> <p>Junction is not plural</p>
<pre>public static final PluralType MANEUVER</pre> <p>Indicates that only one command should be given despite the fact that two Junctions occur; one at each end of the turn lane.</p>
<pre>public static final PluralType CONNECTOR</pre> <p>Indicates that a road segment should not be viewed as an individual piece of road but as part of the intersection.</p>
<pre>public static final PluralType INDETERMINATE</pre> <p>Indicates a maneuver that cannot be explained in one command or at all.</p>

Method Summary

Table 41: Methods in PluralType

Methods
<pre>public static PluralType valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static RoadElement.PluralType[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Plural type identifies when a Junction is made up of multiple Road Elements. It also implies that a maneuver may require different explanation than implied by the geometry.

Enum Constant Details

`public static final PluralType NONE`

Junction is not plural

`public static final PluralType MANEUVER`

Indicates that only one command should be given despite the fact that two Junctions occur; one at each end of the turn lane. It is only necessary to state "turn right" near the beginning of the maneuver because at the end the driver does not have a choice in direction.

`public static final PluralType CONNECTOR`

Indicates that a road segment should not be viewed as an individual piece of road but as part of the intersection. A separate guidance maneuver should not exist for this segment. For example, if making a u-turn in Example A in Figure 4B-113, the driver should receive the instruction to "make the u-turn" and not "turn left, turn left".

`public static final PluralType INDETERMINATE`

Indicates a maneuver that cannot be explained in one command or at all. A graphic may be needed to illustrate the turn. In these situations a driver may need to go right to make a left turn.

Method Details

`public static PluralType valueOf (String name)`

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RoadElement.PluralType[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

ViewObject

The class *ViewObject* is a member of [com.here.android.mpa.common](#).

Class Summary

```
public abstract class ViewObject
```

extends java.lang.Object

Represents the base class implementation for all objects that are selectable from a view.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 42: Nested Classes in ViewObject

Nested Classes
<pre>public static final enumeration ViewObject.Type</pre> <p>Represents values describing various types of selectable view objects.</p>

Constructor Summary

Table 43: Constructors in ViewObject

Constructors
<pre>ViewObject ()</pre>

Method Summary

Table 44: Methods in ViewObject

Methods
<pre>public abstract Type getBaseType ()</pre> <p>Returns the real implementation type of the ViewObject.</p>

Class Details

Represents the base class implementation for all objects that are selectable from a view.

Selectable objects are featured on these views:

- [MapFragment](#)
- [MapView](#)

Constructor Details

ViewObject ()

Method Details

`public abstract Type getBaseType ()`

Returns the real implementation type of the `ViewObject`.

Returns:

The `ViewObject.Type` `ViewObjectType`, either a `USER_OBJECT` or a `UNKNOWN_OBJECT`.

Type

The enumeration `Type` is a member of `com.here.android.mpa.common.ViewObject`.

Enumeration Summary

`public static final enumeration ViewObject.Type`

`extends java.lang.Enum, java.lang.Object`

Represents values describing various types of selectable view objects.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 45: Enum Constants in Type

Fields
<pre>public static final Type USER_OBJECT</pre> <p>Describes the type of view objects that are added by the application, such as <code>MapMarker</code>.</p>
<pre>public static final Type UNKNOWN_OBJECT</pre> <p>Describes the type of view objects that is not a <code>USER_OBJECT</code>.</p>

Method Summary

Table 46: Methods in Type

Methods
<pre>public static Type valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static ViewObject.Type[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing various types of selectable view objects.

Enum Constant Details

`public static final Type USER_OBJECT`

Describes the type of view objects that are added by the application, such as [MapMarker](#).

`public static final Type UNKNOWN_OBJECT`

Describes the type of view objects that is not a USER_OBJECT .

Method Details

`public static Type valueOf (String name)`

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- `name`

A string containing the name of the enumeration member whose value is to be retrieved.

`public static ViewObject.Type[] values ()`

This method retrieves an array of constants of the given enum type in the order in which they are declared.

ViewRect

The class `ViewRect` is a member of [com.here.android.mpa.common](#) .

Class Summary

public final class **ViewRect**

extends java.lang.Object

Represents a rectangle defined by the top-left corner's coordinate and the width and height of the rectangle.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 47: Constructors in ViewRect

Constructors
ViewRect (int x, int y, int width, int height) Constructor that initializes specified X and Y coordinates of the top-left corner plus width and height values, in pixels, for the new ViewRect object.

Method Summary

Table 48: Methods in ViewRect

Methods
public boolean equals (Object other) Determines whether the specified Object is equal to this ViewRect object.
public int getHeight () Gets the current height, in pixels, of the ViewRect .
public int getWidth () Gets the current width, in pixels, of the ViewRect .
public int getX () Gets the current X-coordinate of the ViewRect .
public int getY () Gets the current Y-coordinate of the ViewRect .
public int hashCode () Calculates and returns a hash code value for the ViewRect .
public boolean isValid () Determines whether the ViewRect object is valid.
public void setHeight (int height) Sets a height, in pixels, for the ViewRect .
public void setWidth (int width) Sets a width, in pixels, for the ViewRect .
public void setX (int x)

Methods

Sets an X-coordinate for the ViewRect .

```
public void setX (int x)
```

Sets a Y-coordinate for the ViewRect .

Class Details

Represents a rectangle defined by the top-left corner's coordinate and the width and height of the rectangle.

Constructor Details

```
ViewRect (int x, int y, int width, int height)
```

Constructor that initializes specified X and Y coordinates of the top-left corner plus width and height values, in pixels, for the new ViewRect object.

Parameters:

- **x**
An initial X-coordinate for the left side of the rectangle
- **y**
An initial Y-coordinate for the top of the rectangle
- **width**
An initial width for the rectangle
- **height**
An initial height for the rectangle

Method Details

```
public boolean equals (Object other)
```

Determines whether the specified Object is equal to this ViewRect object.

Parameters:

- **other**
An Object to compare with this ViewRect object for equality

Returns:

True if the compared objects are equal, false otherwise

```
public int getHeight ()
```

Gets the current height, in pixels, of the ViewRect .

Returns:

The current height

```
public int getWidth ()
```

Gets the current width, in pixels, of the ViewRect .

Returns:

The current width

```
public int getX ()
```

Gets the current X-coordinate of the ViewRect .

Returns:

The current X-coordinate

```
public int getY ()
```

Gets the current Y-coordinate of the ViewRect .

Returns:

The current Y-coordinate

```
public int hashCode ()
```

Calculates and returns a hash code value for the ViewRect .

Returns:

The hash code

```
public boolean isValid ()
```

Determines whether the ViewRect object is valid.

Returns:

True if the ViewRect is valid, false otherwise

```
public void setHeight (int height)
```

Sets a height, in pixels, for the ViewRect .

Parameters:

- **height**

Desired height

```
public void setWidth (int width)
```

Sets a width, in pixels, for the ViewRect .

Parameters:

- **width**

Desired width

```
public void setX (int x)
```

Sets an X-coordinate for the ViewRect .

Parameters:

- **x**

Desired X-coordinate

```
public void setY (int y)
```

Sets a Y-coordinate for the ViewRect .

Parameters:

- **y**

Desired Y-coordinate

mapping

The package *mapping* is a member of *com.here.android.mpa*.

Package Summary

mapping

The mapping package provides classes, interfaces, and enumerations that display an interactive map, and related functionality that allows your application to create and add map content.

Package Details

The mapping package provides classes, interfaces, and enumerations that display an interactive map, and related functionality that allows your application to create and add map content.

Some key classes and interfaces in this package are:

- Map

- MapGesture
- MapFragment
- MapObject
- MapTransitLayer

Map

The `Map` interface represents the interactive map itself.

Map schemes (e.g. Satellite, Terrain, etc.) can be changed as follows:

```
map.setMapScheme ( Map.Scheme.NORMAL_DAY );
```

Refer to the `Map.Scheme` class for a description of supported schemes.

A Map can contain visual objects, which are instantiated from the children of the `MapObject` class, such as:

- MapCircle
- MapMarker
- MapPolygon
- MapPolyline
- MapRoute

A polygon, for example, can be drawn on the map as follows:

```
...
MapPolygon polygon = new MapPolygon();
map.addMapObject( polygon );
```

Notice that the parent map object class, `MapContainer`, does not itself represent a visual object. A `MapContainer` determines the stacking order (z-index ordering) of objects on a map.

MapObjects and z-index ordering

The z-index of a `MapObject` specifies its stacking order within a `Map`. In general, an object with a higher z-index appears closer to the viewer than an object with a lower z-index.

The stack order of a `Map` is defined hierarchically, according to the following specifications:

- The `MapObject` with the highest z-index is drawn on top of any other instances of `MapObject`.
- Within a `MapContainer`, the `MapObject` with highest z-index is drawn on top of any other instances of `MapObject`.

Colors

Color values in this package are defined in terms of ARGB integer values, where the 24 least significant bits define red, green, and blue components while the eight most significant bits define the alpha value (0xAARRGGBB) of opacity, for which 0xFFRRGGBB is fully opaque and 0x00RRGGBB is fully transparent.

Note: if the target platform does not support transparency, the alpha value is ignored and the color is displayed as fully opaque.

Map

The class `Map` is a member of `com.here.android.mpa.mapping`.

Class Summary

`public final class Map`

`extends java.lang.Object`

A `Map` object represents a virtual model of the world.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 49: Nested Classes in Map

Nested Classes
<code>public static final enumeration Map.Animation</code> Represents values that describe animation types for on-screen map movements.
<code>public static abstract interface Map.InfoBubbleAdapter</code> Interface for implementing custom info bubbles for <code>MapMarker</code> objects.
<code>public static abstract interface Map.OnSchemeChangedListener</code> Listener for Map scheme changed events.
<code>public static abstract interface Map.OnTransformListener</code> Listener for Map transform events.
<code>public static class Map.PixelResult</code> Result class for conversion of a GeoCoordinate to screen pixel coordinates.
<code>public static final class Map.Scheme</code> Represents a collection of schemes that the <code>Map</code> class supports.

Constructor Summary

Table 50: Constructors in Map

Constructors
<code>Map ()</code>

Field Summary

Table 51: Fields in Map

Fields
<pre>public static final float MOVE_PRESERVE_ORIENTATION</pre> <p>A valid orientation value that lies outside the minimum and maximum supported tilt range, used to indicate that the current orientation should be preserved.</p>
<pre>public static final float MOVE_PRESERVE_TILT</pre> <p>A valid value indicating that the tilt is to be preserved when calling compound Map transform operations.</p>
<pre>public static final double MOVE_PRESERVE_ZOOM_LEVEL</pre> <p>A valid zoom level value that lies outside the range of <code>getMinZoomLevel()</code> and <code>getMaxZoomLevel()</code>, used to indicate that the current zoom level should be preserved.</p>

Method Summary

Table 52: Methods in Map

Methods
<pre>public boolean addMapObject (MapObject object)</pre> <p>Adds a <code>MapObject</code> to this Map .</p>
<pre>public boolean addMapObjects (java.util.List <MapObject> objects)</pre> <p>Adds a <List> of multiple <code>MapObject</code> objects to this Map .</p>
<pre>public boolean addRasterTileSource (MapRasterTileSource source)</pre> <p>Adds a user-defined <code>MapRasterTileSource</code> to this Map .</p>
<pre>public void addSchemeChangedListener (OnSchemeChangedListener listener)</pre> <p>Adds a <code>Map.OnSchemeChangedListener</code> to listen for map scheme change events.</p>
<pre>public void addTransformListener (OnTransformListener listener)</pre> <p>Adds a <code>Map.OnTransformListener</code> to this Map to listen for map transform events.</p>
<pre>public GeoBoundingBox getBoundingBox ()</pre> <p>Returns the current visible map area as a <code>GeoBoundingBox</code>.</p>
<pre>public GeoCoordinate getCenter ()</pre> <p>Returns the <code>GeoCoordinate</code> location at the current center of this Map .</p>
<pre>public int getHeight ()</pre> <p>Returns the current height of this Map , in number of pixels.</p>
<pre>public String getMapDisplayLanguage ()</pre> <p>Get the language which the Map is set to render</p>
<pre>public String getMapScheme ()</pre> <p>Returns the current scheme for the Map .</p>



Methods

```
public List getMapSchemes ()
```

Returns a list containing all supported schemes for the Map .

```
public String getMapSecondaryDisplayLanguage ()
```

Get the secondary language which the Map is set to render

```
public double getMaxZoomLevel ()
```

Returns the highest valid zoom level for Map , representing the closest view near the street-level

```
public double getMinZoomLevel ()
```

Returns the lowest valid zoom level for Map , representing the most distant view away from street-level.

```
public PositionIndicator getPositionIndicator ()
```

Returns the *PositionIndicator* instance that renders the current position with a marker.

```
public double getScaleFromZoomLevel (double level)
```

Returns a map scale value based on the specified zoom level.

```
public java.util.List <ViewObject> getSelectedObjects (PointF p)
```

Returns the list of selectable *ViewObject* instances which are located at the specified screen pixel coordinates.

```
public java.util.List <ViewObject> getSelectedObjects (ViewRect rect)
```

Returns the list of selectable *ViewObject* objects which are within a specified *ViewRect*.

```
public PointF getTransformCenter ()
```

Returns the current center coordinate for Map transformations such as zooming and rotation.

```
public int getWidth ()
```

Returns the current width of this Map , in number of pixels.

```
public double getZoomLevel ()
```

Returns the current zoom level, which will be within a range between *getMinZoomLevel()* and *getMaxZoomLevel()*.

```
public void pan (PointF from, PointF to)
```

Moves the map from one specified screen pixel coordinates to another in a linear motion.

```
public GeoCoordinate pixelToGeo (PointF point)
```

Converts and returns *GeoCoordinate* from screen pixel coordinates.

```
public java.util.List <GeoCoordinate> pixelToGeo (List points)
```

Converts and returns a list of *GeoCoordinate* objects from a <List> of screen pixel coordinates.

```
public PixelResult projectToPixel (GeoCoordinate coordinate)
```

Converts and returns a *PixelResult* that represents screen pixel coordinates from a *GeoCoordinate*.

```
public java.util.List <PixelResult> projectToPixel (java.util.List <GeoCoordinate> coordinates)
```

Converts and returns a list of *Map.PixelResult* elements that represent screen pixel coordinates from a <List> of *GeoCoordinate* objects.

```
public boolean removeMapObject (MapObject object)
```

Methods

Removes a *MapObject* from this Map .

```
public boolean removeMapObjects (java.util.List <MapObject> objects)
```

Removes a List of multiple *MapObject* objects from this Map .

```
public boolean removeRasterTileSource (MapRasterTileSource source)
```

Removes a user-defined *MapRasterTileSource* from this Map .

```
public void removeSchemeChangedListener (OnSchemeChangedListener listener)
```

Removes an existing *Map.OnSchemeChangedListener*.

```
public void removeTransformListener (OnTransformListener listener)
```

Removes an existing *Map.OnTransformListener* from this Map .

```
public void setCenter (GeoCoordinate point, Animation animation, double level, float orientation, float tilt)
```

Moves the center of this Map to a specific *GeoCoordinate*, while simultaneously setting a zoom level (a fraction within the range of minimum and maximum levels), orientation (from 0 degrees to 360 degrees), and tilt (within the range of minimum and maximum tilt angles).

```
public void setCenter (GeoCoordinate point, Animation animation)
```

Moves the center of this Map to the specified GeoCoordinate using the given *Map.Animation*.

```
public void setCenter (PointF newCenter, Animation animation, double zoomLevel, float orientation, float tilt)
```

Centers the map at the specified screen pixel coordinates.

```
public void setInfoBubbleAdapter (InfoBubbleAdapter adapter)
```

Sets the custom info bubble adapter for this map.

```
public boolean setMapDisplayLanguage (Locale language)
```

Set the map display language using a locale.

```
public Map setMapScheme (String scheme)
```

Sets a scheme for the Map to the specified <String> value.

```
public boolean setMapSecondaryDisplayLanguage (Locale language)
```

Set the map secondary display language using a locale.

```
public Map setTransformCenter (PointF center)
```

Sets a center coordinate for Map transformations such as zooming and rotation.

```
public boolean setUseSystemLanguage ()
```

Set the map display language using the system default locale.

```
public Map setZoomLevel (double level)
```

Sets a zoom level for the Map to a fraction that is within the range of minimum and maximum zoom levels.

```
public void setZoomLevel (double level, Animation animation)
```

Sets a zoom level for the Map to a fraction that is within the range of minimum and maximum zoom levels.

```
public void setZoomLevel (double level, PointF focus, Animation animation)
```

Methods

Sets a zoom level for the Map to a fraction that is within the range of minimum and maximum zoom levels while keeping the specified screen coordinate at the same Geographical Location.

```
public void zoomTo (GeoBoundingBox geoRect, Animation animation, float orientation)
```

Moves this Map instance's map center and changes the zoom level to show the specified *GeoBoundingBox* at the given orientation.

```
public void zoomTo (GeoBoundingBox geoRect, int width, int height, Animation animation, float orientation)
```

Moves this Map instance and changes its zoom level to show the specified *GeoBoundingBox* within the specified pixel dimensions around the transform center.

Class Details

A Map object represents a virtual model of the world. When embedded in a *MapFragment*, or *MapView*, Map objects can be used to show maps, add/remove map objects, and enable user interactions.

Constructor Details

Map ()

Field Details

```
public static final float MOVE_PRESERVE_ORIENTATION
```

A valid orientation value that lies outside the minimum and maximum supported tilt range, used to indicate that the current orientation should be preserved. Pass this value to preserve the orientation when calling compound Map transform operations.

```
public static final float MOVE_PRESERVE_TILT
```

A valid value indicating that the tilt is to be preserved when calling compound Map transform operations.

```
public static final double MOVE_PRESERVE_ZOOM_LEVEL
```

A valid zoom level value that lies outside the range of *getMinZoomLevel()* and *getMaxZoomLevel()*, used to indicate that the current zoom level should be preserved. Pass this value to preserve the zoom level when calling compound Map transform operations.

Method Details

```
public boolean addMapObject (MapObject object)
```

Adds a *MapObject* to this Map .

Parameters:

- **object**

A MapObject to add

Returns:

True if the MapObject was added successfully, false otherwise

Throws:

- **NullPointerException**

If object is null.

See also:

[addMapObjects\(List<MapObject>\)](#)

[removeMapObject\(MapObject\)](#)

```
public boolean addMapObject (java.util.List <MapObject> objects)
```

Adds a <List> of multiple *MapObject* objects to this Map .

Parameters:

- **objects**

A <List> of MapObject objects to add

Returns:

True if all the MapObjects in the <List> were added successfully, false otherwise

Throws:

- **NullPointerException**

If objects is null.

See also:

[addMapObject\(MapObject\)](#)

[removeMapObjects\(List<MapObjects>\)](#)

```
public boolean addRasterTileSource (MapRasterTileSource source)
```

Adds a user-defined *MapRasterTileSource* to this Map .

Parameters:

- **source**

A MapRasterTileSource representing a user-defined raster tile source

Returns:

True if the raster tile source was added successfully, false otherwise

See also:

[removeRasterTileSource\(MapRasterTileSource\)](#)

```
public void addSchemeChangedListener (OnSchemeChangedListener listener)
```

Adds a *Map.OnSchemeChangedListener* to listen for map scheme change events.

Parameters:

- **listener**

A *Map.OnSchemeChangedListener* to add to the Map

See also:

[removeTransformListener\(OnTransformListener\)](#)

```
public void addTransformListener (OnTransformListener listener)
```

Adds a *Map.OnTransformListener* to this Map to listen for map transform events.

Parameters:

- **listener**

A *Map.OnTransformListener* to add to the Map

See also:

[removeTransformListener\(OnTransformListener\)](#)

```
public GeoBoundingBox getBoundingBox ()
```

Returns the current visible map area as a *GeoBoundingBox*.

Note that a bounding box is always rectangular, and its sides are always parallel to latitude and longitude. If the map is rotated when this method is called (for example, if the orientation is 10 degrees east of true-north), the returned bounding box will be a circumscribed rectangle that is larger than the visible map area. Similarly, when the map is tilted (for example, if the map is tilted by 45 degrees), the visible map area represents a trapezoidal area in the world. Calling *getBoundingBox()* will then return a larger circumscribed rectangle that contains this trapezoid area.

The bounding box may be invalid when this method is called at low zoom levels, as the map area does not fill the screen.

Returns:

The *GeoBoundingBox* containing the visible map area.

```
public GeoCoordinate getCenter ()
```

Returns the *GeoCoordinate* location at the current center of this Map .

Returns:

The current map center

```
public int getHeight ()
```

Returns the current height of this Map , in number of pixels.

Returns:

The current height

```
public String getMapDisplayLanguage ()
```

Get the language which the Map is set to render

Returns:

String MARC code of the displayed language.

```
public String getMapScheme ()
```

Returns the current scheme for the Map .

Returns:

The current scheme

See also:

[Map.Scheme](#)

[getMapSchemes\(\)](#)

```
public List getMapSchemes ()
```

Returns a list containing all supported schemes for the Map .

Returns:

The supported schemes

See also:

[Map.Scheme](#)

[getMapScheme\(\)](#)

[setMapScheme\(String\)](#)

```
public String getMapSecondaryDisplayLanguage ()
```

Get the secondary language which the Map is set to render

Returns:

String MARC code of the displayed language.

```
public double getMaxZoomLevel ()
```

Returns the highest valid zoom level for `Map`, representing the closest view near the street-level

Returns:

The maximum zoom level

```
public double getMinZoomLevel ()
```

Returns the lowest valid zoom level for `Map`, representing the most distant view away from street-level.

Returns:

The minimum zoom level

```
public PositionIndicator getPositionIndicator ()
```

Returns the `PositionIndicator` instance that renders the current position with a marker. The position indicator should be used with `PositioningManager`.

Returns:

The `PositionIndicator`

```
public double getScaleFromZoomLevel (double level)
```

Returns a map scale value based on the specified zoom level. Scale units are in physical geo centimeters per screen inch.

Parameters:

- **level**

The zoom level to be translated to a map scale.

Returns:

Scale value for the passed `level`. Units are in geo centimeters per screen inch

```
public java.util.List <ViewObject> getSelectedObjects (PointF p)
```

Returns the list of selectable `ViewObject` instances which are located at the specified screen pixel coordinates.

Parameters:

- **p**

Screen pixel coordinate to check for `ViewObject`.

Returns:

The list of `ViewObject` objects at the pixel coordinate. If no object exists at `p`, returns an empty list.

```
public java.util.List <ViewObject> getSelectedObjects (ViewRect rect)
```

Returns the list of selectable `ViewObject` objects which are within a specified `ViewRect`.

Parameters:

- `rect`

A `ViewRect` with selected `ViewObject` objects

Returns:

The list of `ViewObject` objects within the `viewRect`. If no object exists within `rect`, returns an empty list.

```
public PointF getTransformCenter ()
```

Returns the current center coordinate for `Map` transformations such as zooming and rotation. The transform center may be different than the `Map` center.

Returns:

The `<PointF>` representing the current center used for transformations

```
public int getWidth ()
```

Returns the current width of this `Map`, in number of pixels.

Returns:

The current width

```
public double getZoomLevel ()
```

Returns the current zoom level, which will be within a range between `getMinZoomLevel()` and `getMaxZoomLevel()`. The zoom level is only precise to three decimal places due to numerical operations performed internally when rendering the map.

Returns:

The zoom level within the fractional range

```
public void pan (PointF from, PointF to)
```

Moves the map from one specified screen pixel coordinates to another in a linear motion.

Parameters:

- **from**
A <PointF> representing the screen pixel coordinates to pan the map from.
- **to**
A <PointF> representing the screen pixel coordinates to pan the map to.

```
public GeoCoordinate pixelToGeo (PointF point)
```

Converts and returns *GeoCoordinate* from screen pixel coordinates.

This method returns `null` if the conversion fails. (For example, if the coordinate is not a valid value.)

Parameters:

- **point**
The screen pixel coordinates to convert

Returns:

A *GeoCoordinate* representing the map location. `null` if the conversion fails.

See also:

[pixelToGeo\(List<PointF>\)](#)

```
public java.util.List <GeoCoordinate> pixelToGeo (List points)
```

Converts and returns a list of *GeoCoordinate* objects from a <List> of screen pixel coordinates.

This method returns one or more list elements as `null` if the conversion of the corresponding pixel coordinates fails.

Parameters:

- **points**
A <List> of screen pixel coordinates to convert

Returns:

A list of *GeoCoordinate* or `null` elements.

See also:

[pixelToGeo\(PointF\)](#)

```
public PixelResult projectToPixel (GeoCoordinate coordinate)
```

Converts and returns a *PixelResult* that represents screen pixel coordinates from a *GeoCoordinate*. This method converts a *GeoCoordinate* from world space to screen space.

Parameters:

- **coordinate**
A *GeoCoordinate* to convert

Returns:

A `PixelResult` representing screen pixel coordinates and operation success code. Check `PixelResult#getError()` to check the success of the conversion.

See also:

[projectToPixel\(List<GeoCoordinate>\)](#)

```
public java.util.List <PixelResult> projectToPixel (java.util.List<GeoCoordinate> coordinates)
```

Converts and returns a list of `Map.PixelResult` elements that represent screen pixel coordinates from a `<List>` of `GeoCoordinate` objects.

This method returns one or more list elements as `null` if the conversion of the corresponding `GeoCoordinate` instances fails.

Parameters:

- **coordinates**

A `List` of `GeoCoordinate` objects to convert

Returns:

The list of `PixelResult` results. Check `PixelResult#getError()` to check the success of each conversion.

See also:

[projectToPixel\(GeoCoordinate\)](#)

```
public boolean removeMapObject (MapObject object)
```

Removes a `MapObject` from this `Map`.

Parameters:

- **object**

A `MapObject` to remove

Returns:

True if the `MapObject` was removed successfully, false otherwise

See also:

[removeMapObjects\(List<MapObject>\)](#)

```
public boolean removeMapObjects (java.util.List <MapObject> objects)
```

Removes a `List` of multiple `MapObject` objects from this `Map`.

Parameters:

- **objects**

A List of MapObject objects to remove

Returns:

True if all the MapObjects in the List were removed successfully, false otherwise

See also:

[removeMapObject\(MapObject\)](#)

```
public boolean removeRasterTileSource (MapRasterTileSource source)
```

Removes a user-defined *MapRasterTileSource* from this Map .

Parameters:

- **source**

A *MapRasterTileSource* representing a user-defined raster tile source

Returns:

True if the raster tile source was removed successfully, false otherwise

```
public void removeSchemeChangedListener (OnSchemeChangedListener listener)
```

Removes an existing *Map.OnSchemeChangedListener*.

Parameters:

- **listener**

A *Map.OnSchemeChangedListener* to remove from the Map

```
public void removeTransformListener (OnTransformListener listener)
```

Removes an existing *Map.OnTransformListener* from this Map .

Parameters:

- **listener**

A *Map.OnTransformListener* to remove from the Map

```
public void setCenter (GeoCoordinate point, Animation animation, double level, float orientation, float tilt)
```

Moves the center of this Map to a specific *GeoCoordinate*, while simultaneously setting a zoom level (a fraction within the range of minimum and maximum levels), orientation (from 0 degrees to 360 degrees), and tilt (within the range of minimum and maximum tilt angles). If you wish to keep the current zoom level, orientation, or tilt after setting a new center, pass one or more of the following values as the relevant parameter:

- [MOVE_PRESERVE_ZOOM_LEVEL](#) to keep the current zoom level
- [MOVE_PRESERVE_ORIENTATION](#) to keep the current orientation
- [MOVE_PRESERVE_TILT](#) to keep the current tile

Note: it is unlikely that you would pass all three of the special [MOVE_PRESERVE_ZOOM_LEVEL](#), [MOVE_PRESERVE_ORIENTATION](#) and [MOVE_PRESERVE_TILT](#) parameters when calling this method (it would make more sense to call [setCenter\(GeoCoordinate, Animation\)](#)). More likely, you would use one or two of the special parameters (for example, change the orientation and tilt along with the center coordinate while keeping the current zoom level).

Parameters:

- **point**
A GeoCoordinate representing the new center
- **animation**
A [Map.Animation](#) to illustrate the transformation
- **level**
Desired zoom level of the newly-centered Map (pass [MOVE_PRESERVE_ZOOM_LEVEL](#) to keep the current level)
- **orientation**
Desired orientation of the newly-centered Map (pass [MOVE_PRESERVE_ORIENTATION](#) to keep the current orientation)
- **tilt**
Desired tilt angle of the newly-centered Map (pass [MOVE_PRESERVE_TILT](#) to keep the current tilt)

Throws:

- **UnsupportedOperationException**
If orientation angle is not set to MOVE_PRESERVE_ORIENTATION or tilt is not set to MOVE_PRESERVE_TILT.

See also:

[setCenter\(GeoCoordinate, Animation\)](#)

[getMaxZoomLevel\(\)](#)

[getMinZoomLevel\(\)](#)

```
public void setCenter (GeoCoordinate point, Animation animation)
```

Moves the center of this Map to the specified GeoCoordinate using the given [Map.Animation](#).

Parameters:

- **point**
A GeoCoordinate representing the new center
- **animation**
An Animation to illustrate the transformation

See also:

[setCenter\(GeoCoordinate, Animation, double, float, float\)](#)

```
public void setCenter (PointF newCenter, Animation animation, double zoomLevel, float orientation, float tilt)
```

Centers the map at the specified screen pixel coordinates. The zoom level, orientation and tilt angle be adjusted at the same time.

Parameters:

- **newCenter**

A PointF representing the screen pixel coordinates to set as map center.

- **animation**

An Animation to illustrate the transformation

- **zoomLevel**

Desired zoom level of the newly-centered Map. Use [MOVE_PRESERVE_ZOOM_LEVEL](#) to keep the current zoom level.

- **orientation**

Desired orientation of the newly-centered Map. Use [MOVE_PRESERVE_ORIENTATION](#) to keep the current orientation angle.

- **tilt**

Desired tilt angle of the newly-centered Map. Use [MOVE_PRESERVE_TILT](#) to keep the current tilt angle.

Throws:

- **UnsupportedOperationException**

if orientation angle is not set to MOVE_PRESERVE_ORIENTATION or tilt is not set to MOVE_PRESERVE_TILT.

See also:

[setCenter\(GeoCoordinate, Animation, double, float, float\)](#)

```
public void setInfoBubbleAdapter (InfoBubbleAdapter adapter)
```

Sets the custom info bubble adapter for this map.

Parameters:

- **adapter**

A custom implementation for the info bubble.

See also:

[showInfoBubble\(\)](#)

```
public boolean setMapDisplayLanguage (Locale language)
```

Set the map display language using a locale. Causes a map redraw when language is set.



When this method is called, it will override the device's current locale until the device's locale is changed. This language change does not affect other features like search.

Parameters:

- **language**

The language locale as described in <http://developer.android.com/reference/java/util/Locale.htm..>

Returns:

true if the language is accepted by the Map, false otherwise.

```
public Map setMapScheme (String scheme)
```

Sets a scheme for the Map to the specified <String> value.

Parameters:

- **scheme**

The desired scheme from [getMapSchemes\(\)](#).

Returns:

The updated Map.

Throws:

- **AccessControlException**

If the required permission is missing.

See also:

[Map.Scheme](#)

[getMapSchemes\(\)](#)

```
public boolean setMapSecondaryDisplayLanguage (Locale language)
```

Set the map secondary display language using a locale. Causes a map redraw when language is set. Passing null will cause the display of secondary language to be disabled.

Setting a secondary display language will cause the language to be displayed below the primary language for some map labels (e.g. countries).

Parameters:

- **language**

The language locale as described in <http://developer.android.com/reference/java/util/Locale.htm..> or null to disable display of secondary language.

Returns:

true if the language is accepted by the Map, false otherwise.

See also:

`setMapDisplayLanguage(Locale)`

```
public Map setTransformCenter (PointF center)
```

Sets a center coordinate for Map transformations such as zooming and rotation. Transformations performed after calling this method will be based on this new center coordinate. The transform center may be different than the Map center.

Parameters:

- **center**

A <PointF> representing the center used for transformations

Returns:

The updated Map

```
public boolean setUseSystemLanguage ()
```

Set the map display language using the system default locale. Causes a map redraw when language is set.

Returns:

true if the language update is accepted by the Map, false otherwise.

```
public Map setZoomLevel (double level)
```

Sets a zoom level for the Map to a fraction that is within the range of minimum and maximum zoom levels. No animation will be used to illustrate the transformation.

Legal values are the range between `getMinZoomLevel()` and `getMaxZoomLevel()`, inclusive.

If this method is called before map animation has finished (for example, if you had called `setCenter(GeoCoordinate, Animation)`), the existing animation may be stopped and the map will proceed directly to change the zoom level. Consider using other methods that combine multiple actions to avoid unintentionally canceling map animations. For example, use `setCenter(GeoCoordinate, Map.Animation, double, float, float)`.

Note: The zoom level is only precise to three decimal places due to numerical operations performed internally when rendering the map.

Parameters:

- **level**

Desired fractional zoom level

Returns:

The updated Map.

See also:

`setZoomLevel(double, Animation)`

`setZoomLevel(double, PointF, Animation)`
`getMinZoomLevel()`
`getMaxZoomLevel()`

public void `setZoomLevel (double level, Animation animation)`

Sets a zoom level for the Map to a fraction that is within the range of minimum and maximum zoom levels.

Legal values are the range between `getMinZoomLevel()` and `getMaxZoomLevel()` inclusive.

If this method is called before map animation is finished (for example, if you had called `setCenter(GeoCoordinate, Animation)`), the existing animation may be stopped and the map will proceed directly to change the zoom level. Consider using other methods that combine multiple actions to avoid unintentionally canceling map animations. For example, use `setCenter(GeoCoordinate, Animation, double, float, float)`.

Note: The zoom level is only precise to three decimal places due to numerical operations performed internally when rendering the map.

Parameters:

- **level**
Desired fractional zoom level
- **animation**
An Animation to illustrate the transformation

See also:

`setZoomLevel(double)`
`setZoomLevel(double, PointF, Animation)`
`getMinZoomLevel()`
`getMaxZoomLevel()`

public void `setZoomLevel (double level, PointF focus, Animation animation)`

Sets a zoom level for the Map to a fraction that is within the range of minimum and maximum zoom levels while keeping the specified screen coordinate at the same Geographical Location. Concretely, the `GeoCoordinate` of the specified <PointF> is the same before and after the transformation.

Legal values are the range between `getMinZoomLevel()` and `getMaxZoomLevel()` inclusive.

For the purposes of calculating the focus `GeoCoordinate`, the tilt of the map is considered to be 0. The actual map tilt will not change.

Note: do not call this method before setting the map is initialized. If you call this method while either `getWidth()` or `getHeight()` returns 0 it will throw a `RuntimeException`.

Note: The zoom level is only precise to three decimal places due to numerical operations performed internally when rendering the map.

Parameters:

- **level**
Desired fractional zoom level
- **focus**
A `PointF` to keep fixed, in pixel coordinates.
- **animation**
An Animation to illustrate the transformation

See also:

`setZoomLevel(double)`

`setZoomLevel(double, Animation)`

`getMinZoomLevel()`

`getMaxZoomLevel()`

```
public void zoomTo (GeoBoundingBox geoRect, Animation animation, float orientation)
```

Moves this `Map` instance's map center and changes the zoom level to show the specified `GeoBoundingBox` at the given orientation.

Do not call this method before this map instance is initialized. If you call this method while this map is uninitialized (either `getWidth()` or `getHeight()` returns 0), it will throw a `RuntimeException`. Please note the effects of this method will apply on `Map` slightly after the method invocation.

Parameters:

- **geoRect**
A `GeoBoundingBox` to show after the transformation
- **animation**
An Animation to illustrate the transformation
- **orientation**
Desired orientation of the `Map` (Use `MOVE_PRESERVE_ORIENTATION` to keep the current orientation)

Throws:

- **UnsupportedOperationException**
If orientation angle is not set to `MOVE_PRESERVE_ORIENTATION`.

```
public void zoomTo (GeoBoundingBox geoRect, int width, int height, Animation animation, float orientation)
```

Moves this `Map` instance and changes its zoom level to show the specified `GeoBoundingBox` within the specified pixel dimensions around the transform center.

Do not call this method before this map instance is initialized. If you call this method while this map is uninitialized (either `getWidth()` or `getHeight()` returns 0), it will throw a `<RuntimeException>`. Please note the effects of this method will apply on Map slightly after the method invocation.

Parameters:

- **geoRect**

A GeoBoundingBox to show after the transformation

- **width**

The width, in number of pixels, of the bounding area around the transform center, which the geoRect will fit into.

- **height**

The height, in number of pixels, of the bounding area around the transform center, which the geoRect will fit into.

- **animation**

An Animation to illustrate the transformation

- **orientation**

Desired orientation of the Map (pass `MOVE_PRESERVE_ORIENTATION` to keep the current orientation)

Throws:

- **UnsupportedOperationException**

If orientation angle is not set to `MOVE_PRESERVE_ORIENTATION`.

See also:

[setTransformCenter\(PointF\)](#)

Animation

The enumeration *Animation* is a member of `com.here.android.mpa.mapping.Map`.

Enumeration Summary

public static final enumeration **Map.Animation**

extends java.lang.Enum, java.lang.Object

Represents values that describe animation types for on-screen map movements.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 53: Enum Constants in Animation

Fields
<pre>public static final Animation LINEAR</pre>

Fields

Moves in a linear manner as the map resets to a new position.

```
public static final Animation NONE
```

No animation is performed as the map resets to a new position.

Method Summary

Table 54: Methods in Animation

Methods

```
public static Animation valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static Map.Animation[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values that describe animation types for on-screen map movements.

If the map changes size or the app comes to the foreground while `Animation.LINEAR` or `Animation.BOW` is being used in a `Map` attribute setter method, then the animation will abort, and the transition will appear as failed. To avoid this behavior, use the `Animation.NONE` animation type or wait until the map is stable before performing the transition operation.

Enum Constant Details

```
public static final Animation LINEAR
```

Moves in a linear manner as the map resets to a new position.

```
public static final Animation NONE
```

No animation is performed as the map resets to a new position.

Method Details

```
public static Animation valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- `name`

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Map.Animation[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

InfoBubbleAdapter

The interface *InfoBubbleAdapter* is a member of `com.here.android.mpa.mapping.Map`.

Interface Summary

```
public static abstract interface Map.InfoBubbleAdapter
```

Interface for implementing custom info bubbles for `MapMarker` objects.

[For complete information, see the section *Interface Details*]

Method Summary

Table 55: Methods in InfoBubbleAdapter

Methods
<pre>public abstract View getInfoBubble (MapMarker marker)</pre>
Provide a custom info bubble for the marker.
<pre>public abstract View getInfoBubbleContents (MapMarker marker)</pre>
Provide custom contents for the info bubble.

Interface Details

Interface for implementing custom info bubbles for `MapMarker` objects.

Method Details

```
public abstract View getInfoBubble (MapMarker marker)
```

Provide a custom info bubble for the marker.

Parameters:

- **marker**

The `MapMarker` that this bubble is associated with.

Returns:

The view for this bubble (including frame) or null if the implementer wishes to use `getInfoBubbleContents ()`.

```
public abstract View getInfoBubbleContents (MapMarker marker)
```

Provide custom contents for the info bubble.

Parameters:

- **marker**

The [MapMarker](#) that this info bubble is associated with.

Returns:

The view for the contents of this bubble or null if the implementer wishes to use the default info bubble.

OnSchemeChangedListener

The interface *OnSchemeChangedListener* is a member of [com.here.android.mpa.mapping.Map](#).

Interface Summary

public static abstract interface **Map.OnSchemeChangedListener**

Listener for Map scheme changed events.

[For complete information, see the section [Interface Details](#)]

Method Summary

Table 56: Methods in OnSchemeChangedListener

Methods
<pre>public abstract void onMapSchemeChanged (String schemeName)</pre> <p>A callback indicating that the map scheme has changed.</p>

Interface Details

Listener for Map scheme changed events.

Method Details

public abstract void **onMapSchemeChanged (String schemeName)**

A callback indicating that the map scheme has changed.

Parameters:

- **schemeName**

Updated scheme name.

See also:

[setMapScheme\(String\)](#)

OnTransformListener

The interface `OnTransformListener` is a member of `com.here.android.mpa.mapping.Map`.

Interface Summary

public static abstract interface **Map.OnTransformListener**

Listener for Map transform events.

[For complete information, see the section [Interface Details](#)]

Method Summary

Table 57: Methods in `OnTransformListener`

Methods
<pre>public abstract void onMapTransformEnd (MapState mapState)</pre> <p>Called after <code>onMapTransformStart()</code> once the <code>MapState</code> returns to a steady value (such as when it has stopped moving).</p> <pre>public abstract void onMapTransformStart ()</pre> <p>Called just before the <code>MapState</code> begins to change.</p>

Interface Details

Listener for Map transform events. Map transform events are triggered by any operation which causes the `MapState` to change. This includes user interaction (such as map gestures) as well as programmatic calls to the map.

`onMapTransformStart()` is called just before the map state begins to change, while `onMapTransformEnd(MapState)` is called after the map state returns to a steady value. Therefore, there can be a significant amount of time between when the two callbacks are made in cases such as animated map movement events and continuous user interaction.

If you need to update UI widgets as the map state changes, the recommended approach is to trigger a `Runnable` object when `onMapTransformStart()` is called. This method periodically checks the current map state (at no more than 30fps) and updates the UI widgets. The `Runnable` object can then be cancelled upon a call to `onMapTransformEnd(MapState)`. An `android.os.Handler` object can be used to implement this elegantly.

Method Details

public abstract void **onMapTransformEnd (MapState mapState)**

Called after `onMapTransformStart()` once the `MapState` returns to a steady value (such as when it has stopped moving).

Parameters:

- `mapState`

The current state of the map at the time of this callback

```
public abstract void onMapTransformStart ()
```

Called just before the [MapState](#) begins to change. This can be triggered by user interaction (such as map gestures) as well as programmatic calls to the map. This method will not be called again until an [onMapTransformEnd\(MapState\)](#) call has been made.

PixelResult

The class *PixelResult* is a member of *com.here.android.mpa.mapping.Map*.

Class Summary

```
public static class Map.PixelResult
```

```
extends java.lang.Object
```

Result class for conversion of a GeoCoordinate to screen pixel coordinates.

[For complete information, see the section [Class Details](#)]

See also:

[projectToPixel\(GeoCoordinate\)](#)

Nested Class Summary

Table 58: Nested Classes in PixelResult

Nested Classes
<pre>public static final enumeration Map.PixelResult.Error</pre> <p>Error code for the computation of GeoCoordinate to screen pixel coordinate projection</p>

Method Summary

Table 59: Methods in PixelResult

Methods
<pre>public Error getError ()</pre> <p>Get the Map.PixelResult.Error of the GeoCoordinate to screen Pixel conversion.</p>
<pre>public PointF getResult ()</pre> <p>Get the result of the GeoCoordinate to screen Pixel conversion.</p>

Class Details

Result class for conversion of a GeoCoordinate to screen pixel coordinates.

See also:

[projectToPixel\(GeoCoordinate\)](#)

Method Details

`public Error getError ()`

Get the [Map.PixelResult.Error](#) of the GeoCoordinate to screen Pixel conversion.

Returns:

Error screen space in pixels.

`public PointF getResult ()`

Get the result of the GeoCoordinate to screen Pixel conversion.

Returns:

PointF screen space in pixels.

Error

The enumeration `Error` is a member of [com.here.android.mpa.mapping.Map.PixelResult](#).

Enumeration Summary

`public static final enumeration Map.PixelResult.Error`

`extends java.lang.Enum, java.lang.Object`

Error code for the computation of GeoCoordinate to screen pixel coordinate projection

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 60: Enum Constants in Error

Fields
<code>public static final Error NONE</code>
<code>public static final Error NOT_IN_VIEW</code>
<code>public static final Error OVERFLOW</code>
<code>public static final Error UNKNOWN</code>

Method Summary

Table 61: Methods in Error

Methods
<pre>public static Error valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static Map.PixelResult.Error[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Error code for the computation of GeoCoordinate to screen pixel coordinate projection

Enum Constant Details

```
public static final Error NONE
```

```
public static final Error NOT_IN_VIEW
```

```
public static final Error OVERFLOW
```

```
public static final Error UNKNOWN
```

Method Details

```
public static Error valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Map.PixelResult.Error[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Scheme

The class *Scheme* is a member of `com.here.android.mpa.mapping.Map`.

Class Summary

public static final class **Map.Scheme**

extends java.lang.Object

Represents a collection of schemes that the `Map` class supports.

[For complete information, see the section [Class Details](#)]

Field Summary

Table 62: Fields in Scheme

Fields
<pre>public static final String HYBRID_DAY</pre> <p>Satellite tile scheme presented in "day" colors, with visible roads.</p>
<pre>public static final String NORMAL_DAY</pre> <p>Normal scheme presented in "day" colors.</p>
<pre>public static final String NORMAL_DAY_GREY</pre> <p>Normal scheme presented in "day" colors that is suitable for use cases in which map still has a high relevance but is used as background for overlays (like venue maps).</p>
<pre>public static final String SATELLITE_DAY</pre> <p>Satellite tile scheme presented in "day" colors.</p>
<pre>public static final String TERRAIN_DAY</pre> <p>Terrain bitmap scheme presented in "day" colors.</p>

Class Details

Represents a collection of schemes that the `Map` class supports. Each of the schemes in this class can be set by way of the `setMapScheme(String)` method.

Field Details

`public static final String HYBRID_DAY`

Satellite tile scheme presented in "day" colors, with visible roads.

`public static final String NORMAL_DAY`

Normal scheme presented in "day" colors.

```
public static final String NORMAL_DAY_GREY
```

Normal scheme presented in "day" colors that is suitable for use cases in which map still has a high relevance but is used as background for overlays (like venue maps).

```
public static final String SATELLITE_DAY
```

Satellite tile scheme presented in "day" colors. No roads are shown in this scheme.

```
public static final String TERRAIN_DAY
```

Terrain bitmap scheme presented in "day" colors.

MapCircle

The class *MapCircle* is a member of [com.here.android.mpa.mapping](#).

Class Summary

```
public final class MapCircle
```

```
extends com.here.android.mpa.mapping.MapObject, com.here.android.mpa.common.ViewObject,  
java.lang.Object
```

Represents a [MapObject](#) in the shape of a circle.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 63: Constructors in MapCircle

Constructors
<pre>MapCircle (double radius, GeoCoordinate center)</pre> <p>Constructs a <code>MapCircle</code>, which is a <code>MapObject</code> in the shape of a circle.</p>

Method Summary

Table 64: Methods in MapCircle

Methods
<pre>public GeoCoordinate getCenter ()</pre> <p>Returns the <code>GeoCoordinate</code> representing the current center of the <code>MapCircle</code>.</p> <pre>public int getFillColor ()</pre>

Methods

Returns the current fill color for this `MapCircle`, returning an ARGB (Alpha/Red/Green/Blue) integer color value.

```
public int getLineColor ()
```

Returns the current border line color for this `MapCircle`, as an ARGB (Alpha/Red/Green/Blue) integer color value.

```
public int getLineWidth ()
```

Returns the current border line width for this `MapCircle`, in pixels.

```
public double getRadius ()
```

Returns the current radius of the `MapCircle`, in meters.

```
public Type getType ()
```

```
public MapCircle setCenter (GeoCoordinate center)
```

Sets the center for this `MapCircle` to a specified `GeoCoordinate`.

```
public MapCircle setFillColor (int argbColor)
```

Sets a fill color for this `MapCircle` using an ARGB (Alpha/Red/Green/Blue) integer color value.

```
public MapCircle setLineColor (int argbColor)
```

Sets a border line color for this `MapCircle`, using an ARGB (Alpha/Red/Green/Blue) integer color value.

```
public MapCircle setLineWidth (int width)
```

Sets a border line width, in pixels, for this `MapCircle`, an `int` value within the [0..100] range.

```
public MapCircle setRadius (double radius)
```

Sets a radius for this `MapCircle`, in meters.

```
public MapObject setVisible (boolean isVisible)
```

Sets whether this `MapObject` is visible.

Class Details

Represents a `MapObject` in the shape of a circle.

Constructor Details

MapCircle (double radius, GeoCoordinate center)

Constructs a `MapCircle`, which is a `MapObject` in the shape of a circle.

Parameters:

- **radius**

Desired radius of the `MapCircle`, in meters

- **center**

A `GeoCoordinate` representing the center of the `MapCircle`.

Throws:

- **IllegalArgumentException**

If center is invalid.

Method Details

```
public GeoCoordinate getCenter ()
```

Returns the *GeoCoordinate* representing the current center of the *MapCircle*.

Returns:

The current *MapCircle* center

```
public int getFillColor ()
```

Returns the current fill color for this *MapCircle*, returning an ARGB (Alpha/Red/Green/Blue) integer color value. Default fill color is solid blue or in ARGB color, 0xFF0000FF.

Returns:

The current ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255] with 0 meaning no contribution for that component, and 255 meaning 100% contribution

See also:

android.graphics.Color

```
public int getLineColor ()
```

Returns the current border line color for this *MapCircle*, as an ARGB (Alpha/Red/Green/Blue) integer color value. Default line color is solid blue, or in ARGB color, 0xFF0000FF.

Returns:

The current ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255] with 0 meaning no contribution for that component, and 255 meaning 100% contribution

See also:

android.graphics.Color

```
public int getLineWidth ()
```

Returns the current border line width for this *MapCircle*, in pixels. The default width is 0 pixels.

Returns:

The current width of the line defining the border of the *MapCircle*.

```
public double getRadius ()
```

Returns the current radius of the `MapCircle`, in meters. The default radius of a `MapCircle` instance is 1.

Returns:

The current radius of this `MapCircle`.

```
public Type getType ()
```

```
public MapCircle setCenter (GeoCoordinate center)
```

Sets the center for this `MapCircle` to a specified `GeoCoordinate`.

Parameters:

- **center**

Desired `GeoCoordinate` for this `MapCircle` center.

Returns:

The updated `MapCircle` itself.

Throws:

- **IllegalArgumentException**

If center is invalid.

```
public MapCircle setFillColor (int argbColor)
```

Sets a fill color for this `MapCircle` using an ARGB (Alpha/Red/Green/Blue) integer color value.

Parameters:

- **argbColor**

Desired ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255] with 0 meaning no contribution for that component, and 255 meaning 100% contribution

Returns:

The updated `MapCircle` itself.

See also:

[android.graphics.Color](#)

```
public MapCircle setLineColor (int argbColor)
```

Sets a border line color for this `MapCircle`, using an ARGB (Alpha/Red/Green/Blue) integer color value.

Parameters:

- **argbColor**

Desired ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255] with 0 meaning no contribution for that component, and 255 meaning 100% contribution

Returns:

The updated MapCircle itself.

See also:

[android.graphics.Color](#)

```
public MapCircle setLineWidth (int width)
```

Sets a border line width, in pixels, for this MapCircle , an int value within the [0..100] range.

Parameters:

- **width**

Desired width of the line defining the border of the MapCircle

Returns:

The updated MapCircle itself.

```
public MapCircle setRadius (double radius)
```

Sets a radius for this MapCircle , in meters.

Parameters:

- **radius**

Desired radius of the MapCircle.

Returns:

The updated MapCircle itself.

Throws:

- **IllegalArgumentException**

If the supplied radius is less than or equal to zero.

```
public MapObject setVisible (boolean isVisible)
```

Sets whether this MapObject is visible.

Parameters:

- **isVisible**

A boolean variable specifying whether this MapObject is visible

Returns:

The updated `MapObject` itself.

See also:

`setVisible(boolean)`

MapContainer

The class `MapContainer` is a member of `com.here.android.mpa.mapping`.

Class Summary

`public final class MapContainer`

`extends com.here.android.mpa.mapping.MapObject, com.here.android.mpa.common.ViewObject, java.lang.Object`

Represents a container that determines the stacking order of objects on a `Map`.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 65: Constructors in `MapContainer`

Constructors
<code>MapContainer ()</code> Creates an empty <code>MapContainer</code> .

Method Summary

Table 66: Methods in `MapContainer`

Methods
<code>public boolean addMapObject (MapObject object)</code> Adds a <code>MapObject</code> to this <code>MapContainer</code> .
<code>public boolean equals (Object obj)</code>
<code>public java.util.List <MapObject> getAllMapObjects ()</code> Returns the list of all <code>MapObject</code> objects within this <code>MapContainer</code> .
<code>public Type getType ()</code>
<code>public int getZIndex ()</code> Returns the current z-index (stacking order) of this <code>MapContainer</code> .
<code>public int hashCode ()</code>
<code>public boolean isVisible ()</code>

Methods

Determines whether this `MapContainer` is visible on the map.

```
public boolean removeAllMapObjects ()
```

Removes all `MapObject` objects currently within this `MapContainer`.

```
public boolean removeMapObject (MapObject object)
```

Removes the specified `MapObject` from this `MapContainer`.

```
public MapContainer setVisible (boolean isVisible)
```

Sets whether this `MapContainer` is visible.

```
public MapContainer setZIndex (int index)
```

Sets a z-index (stacking order) value for this `MapContainer`.

Class Details

Represents a container that determines the stacking order of objects on a `Map`. Applications can add certain types of `MapObject` objects into a `MapContainer`. For more details, refer to `addMapObject(MapObject)`.

You can use `MapContainer.setVisible(boolean)` to control whether the objects in the container are visible. If `MapContainer.setVisible(true)`, then the visibility settings of each map object in the container are used.

Unlike other map objects, `MapContainer` does not support the use of visibility masks, so you cannot set container visibility on a zoom level basis.

Constructor Details

`MapContainer ()`

Creates an empty `MapContainer`.

Method Details

```
public boolean addMapObject (MapObject object)
```

Adds a `MapObject` to this `MapContainer`. Only the following types of `MapObject` objects can be added:

- `MapMarker` objects
- `MapCircle` objects
- `MapPolyline` objects
- `MapPolygon` objects

For a complete enumeration of available `MapObject` types, refer to `MapObject.Type`.

Parameters:

- `object`

A `MapObject` to add to this `MapContainer`

Returns:

True if the [MapObject](#) was added successfully to this [MapContainer](#), false otherwise (nesting [MapContainer](#) is not supported).

See also:

[removeMapObject\(MapObject\)](#)

```
public boolean equals (Object obj)
```

Parameters:

- **obj**

```
public java.util.List <MapObject> getAllMapObjects ()
```

Returns the list of all [MapObject](#) objects within this [MapContainer](#). Modifications to objects returned from the array are not guaranteed to be reflected properly in the [MapContainer](#). Use [addMapObject\(MapObject\)](#) and [removeMapObject\(MapObject\)](#) to modify individual array elements.

Note: the order of the [MapObjects](#) returned in the [List](#) is arbitrary. There is no guarantee the list is sorted in the order the [MapObjects](#) were added to the [MapContainer](#).

Returns:

A list containing all [MapObject](#) objects within the [MapContainer](#). If the [MapContainer](#) contains no map object, an empty array will be returned.

```
public Type getType ()
```

```
public int getZIndex ()
```

Returns the current z-index (stacking order) of this [MapContainer](#). A higher z-index indicates that the object is positioned more in front.

Returns:

The current ordinal z-index number

```
public int hashCode ()
```

```
public boolean isVisible ()
```

Determines whether this [MapContainer](#) is visible on the map.

Returns:

True if this [MapContainer](#) is visible, false otherwise

```
public boolean removeAllMapObjects ()
```

Removes all *MapObject* objects currently within this *MapContainer*.

Returns:

True if all *MapObject* objects were removed successfully from this *MapContainer*, false otherwise

See also:

[removeMapObject\(MapObject\)](#)

```
public boolean removeMapObject (MapObject object)
```

Removes the specified *MapObject* from this *MapContainer*. If the specified *MapObject* is not contained within the *MapContainer*, the container will be unchanged.

Parameters:

- **object**

A *MapObject* to remove from this *MapContainer*

Returns:

True if the *MapObject* was removed successfully from this *MapContainer*, false otherwise

See also:

[removeAllMapObjects\(\)](#)

```
public MapContainer setVisible (boolean isVisible)
```

Sets whether this *MapContainer* is visible.

Parameters:

- **isVisible**

A boolean variable specifying whether this *MapContainer* is visible

Returns:

The updated *MapContainer* itself.

```
public MapContainer setZIndex (int index)
```

Sets a z-index (stacking order) value for this *MapContainer*.

Parameters:

- **index**

A new z-index value for this *MapContainer*, a 16-bit int within the range [0..65535]

Returns:

The updated *MapContainer* itself.

Throws:

- **IllegalArgumentException**

If `index` is not within the valid range.

MapFragment

The class `MapFragment` is a member of [com.here.android.mpa.mapping](#).

Class Summary

```
public class MapFragment  
extends java.lang.Object
```

A fragment class that automatically creates a [Map](#) and handles map UI interactions such as panning and zooming.

[For complete information, see the section [Class Details](#)]

See also:

[android.app.Fragment](#)

Constructor Summary

Table 67: Constructors in `MapFragment`

Constructors
<code>MapFragment ()</code> Constructor

Method Summary

Table 68: Methods in `MapFragment`

Methods
<code>public void addOnMapRenderListener (OnMapRenderListener listener)</code> Adds a OnMapRenderListener to listen for map render events.
<code>public Rect getCopyrightBoundaryRect ()</code> Gets the current HERE copyright logo's boundary rectangle.
<code>public int getCopyrightLogoHeight ()</code> Returns the height of the copyright logo.
<code>public CopyrightLogoPosition getCopyrightLogoPosition ()</code> Returns the on-screen position of the HERE copyright logo as a CopyrightLogoPosition value.
<code>public int getCopyrightLogoWidth ()</code>



Methods

Returns the width of the copyright logo.

```
public int getCopyrightMargin ()
```

Returns the current margin for the HERE copyright logo, in number of pixels, as an offset from the edge of the visible map area to the edge of the logo.

```
public Map getMap ()
```

Returns the instance of *Map* associated with this map fragment

```
public MapGesture getMapGesture ()
```

Returns the *MapGesture* object representing the current gesture handler for the *MapFragment*.

```
public void init (OnEngineInitListener listener)
```

Initializes the *MapEngine* and displays a map that occupies the entire *MapFragment*'s view rectangle.

```
public void init (Context context, OnEngineInitListener listener)
```

Initializes the *MapEngine* and displays a map that occupies the entire *MapFragment*'s view rectangle.

```
public View onCreateView (LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState)
```

Called when this fragment is first attached to its Activity .

```
public void onDestroyView ()
```

Called when the view previously created by *onCreateView(LayoutInflater, ViewGroup, Bundle)* has been detached from this fragment.

```
public void onInflate (Activity activity, AttributeSet attrs, Bundle savedInstanceState)
```

Called when this fragment is being created as part of a view layout inflation, typically from setting the content view of an activity.

```
public void onInflate (AttributeSet attrs, Bundle savedInstanceState)
```

Deprecated: As of API level 12, replaced by *onInflate(Activity, AttributeSet, Bundle)*

```
public void onPause ()
```

Called when this fragment is no longer resumed.

```
public void onResume ()
```

Called when this fragment is visible to the user and actively running.

```
public void onSaveInstanceState (Bundle outState)
```

Called when this fragment has been asked to save its current dynamic state.

```
public void removeOnMapRenderListener (OnMapRenderListener listener)
```

Removes an existing *OnMapRenderListener*.

```
public void setCopyrightBoundaryRect (Rect rect)
```

Sets a rectangle, in pixels, relative to the top left corner of the *MapFragment*'s boundary, for the placement of the HERE copyright logo.

```
public void setCopyrightLogoPosition (CopyrightLogoPosition position)
```

Sets a position for the HERE copyright logo.

```
public void setCopyrightMargin (int margin)
```

Methods

Sets a margin for the HERE copyright logo, in number of pixels, as an offset from the edge of the visible map area to the edge of the logo (depending on the placement).

```
public void setMapMarkerDragListener (OnDragListener listener)
```

Sets a *MapMarker.OnDragListener* to be invoked whenever any *MapMarker* on a *Map* that is attached to this fragment is dragged.

```
public void setOnTouchListener (View.OnTouchListener listener)
```

Sets an android.view.OnTouchListener to be invoked whenever a touch event is sent to the *MapFragment*.

Class Details

A fragment class that automatically creates a *Map* and handles map UI interactions such as panning and zooming. *MapFragment* extends the Android Fragment class and retains its lifecycle behaviors.

Upon the initialization of *MapFragment*, a *Map* object is automatically created and bound to the fragment. This *Map* object is then persisted throughout the *MapFragment*'s lifetime. Since *MapFragment* internally calls *Fragment.setRetainInstance(true)*, the *Map* will retain any properties applied to it during an application's lifetime.

MapFragment objects have their own lifecycle, state, and back stack, thus it is unsafe to assume objects returned by a *MapFragment* instance (with the exception of *Map*) will be available throughout the lifetime of its attached activity.

A *MapFragment* is defined in an Android layout XML file. For example:

```
<fragment
    class="com.here.android.mpa.mapping.MapFragment"
    android:id="@+id/map_fragment"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent" />
```

Note: *MapFragment* automatically handles *MapEngine* pausing and resuming during activity state changes, thus it is not necessary for the activity that owns *MapFragment* instances to manually call *onPause()* or *onResume()* during the activity's *onPause()* and *onResume()*. However, considerations should be made in how much processing is done during the *onResume()* method. Performing significant amounts of processing may delay view rendering in cases such as device orientation changes. In these cases, it is recommended to use a specifically designated handler to organize the amount of processing to be done.

See also:

[android.app.Fragment](#)

Constructor Details

MapFragment ()

Constructor



Method Details

```
public void addOnMapRenderListener (OnMapRenderListener listener)
```

Adds a *OnMapRenderListener* to listen for map render events.

Parameters:

- **listener**

A *OnMapRenderListener* to add to the MapFragment

See also:

removeOnMapRenderListener(OnMapRenderListener)

```
public Rect getCopyrightBoundaryRect ()
```

Gets the current HERE copyright logo's boundary rectangle. Returns `null` if a boundary rect has not been set previously.

Returns:

The copyright logo's boundary rect. `null` if a boundary rect has not been set previously.

See also:

setCopyrightBoundaryRect(Rect)

```
public int getCopyrightLogoHeight ()
```

Returns the height of the copyright logo.

This method only returns a valid value once fragment initialization has taken completed.

Returns:

The height of the copyright logo, in number of pixels

```
public CopyrightLogoPosition getCopyrightLogoPosition ()
```

Returns the on-screen position of the HERE copyright logo as a *CopyrightLogoPosition* value.

Returns:

The position of the logo.

```
public int getCopyrightLogoWidth ()
```

Returns the width of the copyright logo.

This method only returns a valid value once fragment initialization has completed.

Returns:



The width of the copyright logo, in number of pixels

```
public int getCopyrightMargin ()
```

Returns the current margin for the HERE copyright logo, in number of pixels, as an offset from the edge of the visible map area to the edge of the logo.

This method only returns a valid value once fragment initialization has taken place.

Returns:

The current offset from the edge of the *MapFragment*, in number of pixels

```
public Map getMap ()
```

Returns the instance of *Map* associated with this map fragment

Returns:

The *Map* object currently displayed in this fragment.

```
public MapGesture getMapGesture ()
```

Returns the *MapGesture* object representing the current gesture handler for the *MapFragment*. Applications can intercept this object and override the default event behaviors.

Returns:

The *MapGesture*

```
public void init (OnEngineInitListener listener)
```

Initializes the *MapEngine* and displays a map that occupies the entire *MapFragment*'s view rectangle. Users of *MapFragment* should call this method or *init(Context, OnEngineInitListener)* after the fragment is first attached to its activity. This method should only be used for fragments declared in a layout XML. Do not use this method when *MapFragment* is created programmatically.

Parameters:

- **listener**

A *OnEngineInitListener* object that will be called when *MapFragment* initialization is finished. A null object can be supplied if the caller does not expect any notification when initialization completes.

See also:

OnEngineInitListener

init(Context, OnEngineInitListener)

init(Context, OnEngineInitListener)

```
public void init (Context context, OnEngineInitListener listener)
```

Initializes the [MapEngine](#) and displays a map that occupies the entire [MapFragment](#)'s view rectangle. Users of [MapFragment](#) should call this method after the fragment is first attached to its activity.

This method can be used for [MapFragment](#) objects that are created programatically or declared in a layout XML file.

Parameters:

- **context**

The application context of this fragment.

- **listener**

A [OnEngineInitListener](#) object that will be called when [MapFragment](#) initialization is finished. A null object can be supplied if the caller does not require any notification when initialization completes.

See also:

[OnEngineInitListener](#)

[init\(Context, OnEngineInitListener\)](#)

[init\(OnEngineInitListener\)](#)

```
public View onCreateView (LayoutInflater inflater, ViewGroup container,
Bundle savedInstanceState)
```

Called when this fragment is first attached to its [Activity](#). Automatically starts to initialize the [MapEngine](#) for later use.

Parameters:

- **inflater**

- **container**

- **savedInstanceState**

Returns:

The created [MapView](#) object.

See also:

[android.app.Fragment#onAttach\(android.app.Activity\)](#)

```
public void onDestroyView ()
```

Called when the view previously created by [onCreateView\(LayoutInflater, ViewGroup, Bundle\)](#) has been detached from this fragment. The [MapView](#) object created earlier will detach itself of its associated [Map](#) instance.

See also:

[android.app.Fragment#onDestroyView\(\)](#)

```
public void onInflate (Activity activity, AttributeSet attrs, Bundle savedInstanceState)
```

Called when this fragment is being created as part of a view layout inflation, typically from setting the content view of an activity. This method may be called immediately after the fragment is created from a tag in a layout file.

Parameters:

- **activity**
- **attrs**
- **savedInstanceState**

See also:

android.app.Fragment#onInflate(android.app.Activity, android.util.AttributeSet, android.os.Bundle)

```
public void onInflate (AttributeSet attrs, Bundle savedInstanceState)
```

Deprecated: As of API level 12, replaced by [onInflate\(Activity, AttributeSet, Bundle\)](#)

Parameters:

- **attrs**
- **savedInstanceState**

```
public void onPause ()
```

Called when this fragment is no longer resumed. All *MapEngine* activities will be paused automatically.

See also:

android.app.Fragment#onPause()

```
public void onResume ()
```

Called when this fragment is visible to the user and actively running. All *MapEngine* activities will be resumed automatically.

See also:

android.app.Fragment#onResume()

```
public void onSaveInstanceState (Bundle outState)
```

Called when this fragment has been asked to save its current dynamic state. Saving its current state allows for it to be later reconstructed in a new instance.

Parameters:

- **outState**



See also:

android.app.Fragment#onSaveInstanceState(android.os.Bundle)

```
public void removeOnMapRenderListener (OnMapRenderListener listener)
```

Removes an existing *OnMapRenderListener*.

Parameters:

- **listener**

A *OnMapRenderListener* to remove from the *MapFragment*

```
public void setCopyrightBoundaryRect (Rect rect)
```

Sets a rectangle, in pixels, relative to the top left corner of the *MapFragment*'s boundary, for the placement of the HERE copyright logo.

If the specified rectangle is not contained completely within the current visible map area, their area of intersection will be used instead of the specified rectangle's area. The copyright logo and copyright margin must fit into the rectangle, otherwise specified rectangle will be ignored.

The rectangle is reset upon screen rotation or upon screen re-creation, or it can be done by setting a null - *Rect* .

Parameters:

- **rect**

A *Rect* representing the desired rectangular container to be used for positioning the copyright logo. Use null *Rect* to reset the boundary container.

```
public void setCopyrightLogoPosition (CopyrightLogoPosition position)
```

Sets a position for the HERE copyright logo. The current default is to place the logo at the center-bottom of the visible map view area.

After the logo's position is set, the position stays effective even when the screen is rotated or re-created.

Parameters:

- **position**

A *CopyrightLogoPosition* value representing the desired placement of the HERE copyright logo with respect to the visible map view area

```
public void setCopyrightMargin (int margin)
```

Sets a margin for the HERE copyright logo, in number of pixels, as an offset from the edge of the visible map area to the edge of the logo (depending on the placement).

Parameters:

- **margin**

Desired offset from the edge of the [MapFragment](#)

```
public void setMapMarkerDragListener (OnDragListener listener)
```

Sets a [MapMarker.OnDragListener](#) to be invoked whenever any [MapMarker](#) on a [Map](#) that is attached to this fragment is dragged.

Parameters:

- **listener**

An [MapMarker.OnDragListener](#) to set for this [MapFragment](#)

```
public void setOnTouchListener (View.OnTouchListener listener)
```

Sets an android.view.OnTouchListener to be invoked whenever a touch event is sent to the [MapFragment](#).

Parameters:

- **listener**

An android.view.OnTouchListener to set for the [MapFragment](#)

See also:

[android.view.View.OnTouchListener](#)

MapGesture

The interface [MapGesture](#) is a member of [com.here.android.mpa.mapping](#) .

Interface Summary

public abstract interface [MapGesture](#)

Encapsulates all user interactions and touch gestures.

[For complete information, see the section [Interface Details](#)]

Nested Class Summary

Table 69: Nested Classes in [MapGesture](#)

Nested Classes
<pre>public static abstract interface MapGesture.OnGestureListener</pre> <p>Event Listener interface for gesture events.</p>

Method Summary

Table 70: Methods in MapGesture

Methods
<pre>public abstract void addOnGestureListener (OnGestureListener listener)</pre> <p>Adds a <i>MapGesture.OnGestureListener</i> to listen for map gesture events.</p>
<pre>public abstract void cancelKineticPanning ()</pre> <p>Cancels all currently active motions caused by kinetic panning.</p>
<pre>public abstract boolean isDoubleTapEnabled ()</pre> <p>Returns a boolean value indicating whether double-tap is enabled for the <i>MapGesture</i>.</p>
<pre>public abstract boolean isFixedMapCenterOnMapRotateZoom ()</pre> <p>Returns a boolean value indicating whether the transform center is applied on rotate and zoom interactions.</p>
<pre>public abstract boolean isKineticFlickEnabled ()</pre> <p>Returns a boolean value indicating whether flick-to-scroll (with kinetic momentum) is enabled for the <i>MapGesture</i>.</p>
<pre>public abstract boolean isKineticPinchEnabled ()</pre> <p>Deprecated: As of release 2.0.</p> <p>Returns a boolean value indicating whether pinch (with kinetic momentum) is enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isKineticRotationEnabled ()</pre> <p>Deprecated: As of release 2.0.</p> <p>Returns a boolean value indicating whether rotation (with kinetic momentum) is enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isLongPressEnabled ()</pre> <p>Returns a boolean value indicating whether long-press is enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isPanningEnabled ()</pre> <p>Returns a boolean value indicating whether panning is enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isPinchEnabled ()</pre> <p>Returns a boolean value indicating whether pinch is enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isRotateEnabled ()</pre> <p>Returns a boolean value indicating whether two-finger rotation is enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isSingleTapEnabled ()</pre> <p>Returns a boolean value indicating whether single-tap is enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isTiltEnabled ()</pre> <p>Returns a boolean value indicating whether tilt is enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isTwoFingerPanningEnabled ()</pre> <p>Returns a boolean value indicating whether two-finger panning interactions are enabled for this <i>MapGesture</i>.</p>
<pre>public abstract boolean isTwoFingerPinchRotateEnabled ()</pre> <p>Deprecated: As of release 2.0.</p>

Methods

Returns a boolean value indicating whether the two-finger pinch-and-rotate interaction is enabled for this MapGesture .

```
public abstract boolean isTwoFingerTapEnabled ()
```

Returns a boolean value indicating whether two-finger tap is enabled for this MapGesture .

```
public abstract void removeOnGestureListener (OnGestureListener listener)
```

Removes an existing *MapGesture.OnGestureListener*.

```
public abstract MapGesture setAllGesturesEnabled (boolean enabled)
```

Sets all possible kinds of gesture interaction to be either enabled or disabled for the MapGesture .

```
public abstract MapGesture setDoubleTapEnabled (boolean enabled)
```

Sets whether double-tap interactions are enabled or disabled for this MapGesture .

```
public abstract MapGesture setFixedMapCenterOnMapRotateZoom (boolean lock)
```

Sets whether the transform center is applied during multitouch gestures.

```
public abstract MapGesture setKineticFlickEnabled (boolean enabled)
```

Sets whether flick-to-scroll (with kinetic momentum) interactions are enabled for this MapGesture .

```
public abstract MapGesture setKineticPinchEnabled (boolean isEnabled)
```

Deprecated: As of release 2.0.

Sets whether the pinch (with kinetic momentum) interaction is enabled or disabled for this MapGesture .

```
public abstract MapGesture setKineticRotationEnabled (boolean enabled)
```

Deprecated: As of release 2.0.

Sets whether the rotation (with kinetic momentum) interaction is enabled or disabled for this MapGesture .

```
public abstract MapGesture setLongPressEnabled (boolean enabled)
```

Sets whether long-press interactions are enabled or disabled for this MapGesture .

```
public abstract MapGesture setPanningEnabled (boolean enabled)
```

Sets panning interactions to be either enabled or disabled for this MapGesture .

```
public abstract MapGesture setPinchEnabled (boolean enabled)
```

Sets whether pinch interactions are enabled or disabled for this MapGesture .

```
public abstract MapGesture setRotateEnabled (boolean enabled)
```

Sets whether two-finger rotate interactions are enabled for this MapGesture .

```
public abstract MapGesture setSingleTapEnabled (boolean enabled)
```

Sets whether single-tap interactions are enabled or disabled for this MapGesture .

```
public abstract MapGesture setTiltEnabled (boolean enabled)
```

Sets whether tilt interactions are enabled or disabled for this MapGesture .

```
public abstract MapGesture setTwoFingerPanningEnabled (boolean enable)
```

Sets whether the two-finger panning interaction is enabled for this MapGesture .

```
public abstract MapGesture setTwoFingerPinchRotateEnabled (boolean enable)
```

Deprecated: As of release 2.0.

Methods

Sets whether the two-finger pinch-and-rotate interaction is enabled for this MapGesture .

```
public abstract MapGesture setTwoFingerTapEnabled (boolean enabled)
```

Sets whether two-finger tap gestures are enabled or disabled for this MapGesture .

Interface Details

Encapsulates all user interactions and touch gestures.

Default gestures made available through this interface include:

- Panning - allows a user to pan around a map by holding one finger on the screen and dragging to a new geographical location
- Kinetic Flick - allows a user to pan around a map by "flicking" the screen with one finger (faster than panning but less precise)
- Pinch To Zoom - allows a user to zoom out or zoom in by, respectively, pinching or spreading two fingers being held to the screen
- Double Tap - allows a user to zoom in to view closer geographical details
- Two-Finger Tap - allows a user to zoom out to view a wider geographical area
- Two-Finger Vertical Drag - allows a user to tilt a map to an angle between "straight down from above" and "looking toward the horizon"
- Two-Finger Rotate - allows a user to rotate a map to a desired compass orientation
- Single Tap - does not encapsulate any default behavior. Developers can add application-specific functionality to this gesture.
- Long Press - does not encapsulate any default behavior. Developers can add application-specific functionality to this gesture.

Various setter methods of this interface allow an application developer to set specific gestures as either enabled or disabled. There is also a `setAllGesturesEnabled(boolean)` method which simultaneously enables or disables all gestures.

Note: the default functionality of one or more gestures can be customized by implementing the `MapGesture.OnGestureListener` class and overriding appropriate methods to define desired gesture functionality (this must be done to make use of the long press gesture).

Method Details

```
public abstract void addOnGestureListener (OnGestureListener listener)
```

Adds a `MapGesture.OnGestureListener` to listen for map gesture events. When there are multiple listeners subscribed to the MapGesture events, the order when a subscriber receives a callback is determined by the order when they are added to MapGesture .

It is important that after adding an `MapGesture.OnGestureListener` in an user application, remember to call `removeOnGestureListener(OnGestureListener)` when there's no longer a need to listen for map gesture events to free up application resources.

Parameters:

- `listener`

A `MapGesture.OnGestureListener` to add to this MapGesture

See also:

[removeOnGestureListener\(OnGestureListener\)](#)

```
public abstract void cancelKineticPanning ()
```

Cancels all currently active motions caused by kinetic panning.

```
public abstract boolean isDoubleTapEnabled ()
```

Returns a boolean value indicating whether double-tap is enabled for the MapGesture . By default, this value is set to true.

Returns:

True if double-tap is enabled, false otherwise

```
public abstract boolean isFixedMapCenterOnMapRotateZoom ()
```

Returns a boolean value indicating whether the transform center is applied on rotate and zoom interactions. The default value is false.

Returns:

True if transform center is fixed during zoom, False otherwise.

```
public abstract boolean isKineticFlickEnabled ()
```

Returns a boolean value indicating whether flick-to-scroll (with kinetic momentum) is enabled for the MapGesture . By default, this value is set to true.

Returns:

True if kinetic flick is enabled, false otherwise

```
public abstract boolean isKineticPinchEnabled ()
```

Deprecated: As of release 2.0.

This gesture is disabled at all times.

Returns a boolean value indicating whether pinch (with kinetic momentum) is enabled for this MapGesture . By default, this value is set to false.

Returns:

True if rotation flick is enabled, false otherwise

```
public abstract boolean isKineticRotationEnabled ()
```

Deprecated: As of release 2.0.

This gesture is disabled at all times.

Returns a boolean value indicating whether rotation (with kinetic momentum) is enabled for this MapGesture . By default, this value is set to false.

Returns:

True if rotation flick is enabled, false otherwise.

```
public abstract boolean isLongPressEnabled ()
```

Returns a boolean value indicating whether long-press is enabled for this MapGesture . By default, this value is set to true.

Returns:

True if long-press is enabled, false otherwise

```
public abstract boolean isPanningEnabled ()
```

Returns a boolean value indicating whether panning is enabled for this MapGesture . By default, this value is set to true.

Returns:

True if panning is enabled, false otherwise

```
public abstract boolean isPinchEnabled ()
```

Returns a boolean value indicating whether pinch is enabled for this MapGesture . By default, this value is set to true.

Returns:

True if pinch is enabled, false otherwise

```
public abstract boolean isRotateEnabled ()
```

Returns a boolean value indicating whether two-finger rotation is enabled for this MapGesture . By default, this value is set to true.

Returns:

True if rotate is enabled, false otherwise

```
public abstract boolean isSingleTapEnabled ()
```

Returns a boolean value indicating whether single-tap is enabled for this MapGesture . By default, this value is set to true.

Returns:

True if single-tap is enabled, false otherwise

```
public abstract boolean isTiltEnabled ()
```

Returns a boolean value indicating whether tilt is enabled for this `MapGesture`. By default, this value is set to true.

Returns:

True if tilt is enabled, false otherwise

```
public abstract boolean isTwoFingerPanningEnabled ()
```

Returns a boolean value indicating whether two-finger panning interactions are enabled for this `MapGesture`. By default, this value is set to true.

Returns:

A boolean true if enabled, false if disabled.

```
public abstract boolean isTwoFingerPinchRotateEnabled ()
```

Deprecated: As of release 2.0.

This gesture is disabled at all times.

Returns a boolean value indicating whether the two-finger pinch-and-rotate interaction is enabled for this `MapGesture`. By default, this value is set to true.

Returns:

true if enabled, false if disabled.

```
public abstract boolean isTwoFingerTapEnabled ()
```

Returns a boolean value indicating whether two-finger tap is enabled for this `MapGesture`. By default, this value is set to true.

Returns:

True if two-finger tap is enabled, false otherwise

```
public abstract void removeOnGestureListener (OnGestureListener listener)
```

Removes an existing `MapGesture.OnGestureListener`. Call this method to free up application resources when there's no longer any need to listen for map gesture events.

Parameters:

- **listener**

A `MapGesture.OnGestureListener` to remove from this `MapGesture`

```
public abstract MapGesture setAllGesturesEnabled (boolean enabled)
```

Sets all possible kinds of gesture interaction to be either enabled or disabled for the MapGesture .

Parameters:

- **enabled**

A boolean specifying whether all gestures are enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setDoubleTapEnabled (boolean enabled)
```

Sets whether double-tap interactions are enabled or disabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether double-tap is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setFixedMapCenterOnMapRotateZoom (boolean lock)
```

Sets whether the transform center is applied during multitouch gestures. If this value is enabled, rotation and zoom will always be applied using the transform center, instead of a point relative the touch interaction.

Parameters:

- **lock**

A boolean specifying whether transform center is fixed . Default is false

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setKineticFlickEnabled (boolean enabled)
```

Sets whether flick-to-scroll (with kinetic momentum) interactions are enabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether kinetic flick is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setKineticPinchEnabled (boolean isEnabled)
```

Deprecated: As of release 2.0.

This gesture is disabled at all times.

Sets whether the pinch (with kinetic momentum) interaction is enabled or disabled for this MapGesture .

Parameters:

- **isEnabled**

A boolean specifying whether rotation flick is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setKineticRotationEnabled (boolean enabled)
```

Deprecated: As of release 2.0.

This gesture is disabled at all times.

Sets whether the rotation (with kinetic momentum) interaction is enabled or disabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether rotation flick is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setLongPressEnabled (boolean enabled)
```

Sets whether long-press interactions are enabled or disabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether long-press is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setPanningEnabled (boolean enabled)
```

Sets panning interactions to be either enabled or disabled for this MapGesture . Note that when panning is disabled, kinetic panning will also be blocked, even if it is enabled.

Parameters:

- **enabled**

A boolean specifying whether panning is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setPinchEnabled (boolean enabled)
```

Sets whether pinch interactions are enabled or disabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether pinch is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setRotateEnabled (boolean enabled)
```

Sets whether two-finger rotate interactions are enabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether rotate is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setSingleTapEnabled (boolean enabled)
```

Sets whether single-tap interactions are enabled or disabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether single-tap is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setTiltEnabled (boolean enabled)
```

Sets whether tilt interactions are enabled or disabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether tilt is enabled

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setTwoFingerPanningEnabled (boolean enable)
```

Sets whether the two-finger panning interaction is enabled for this MapGesture .

Parameters:

- **enable**

True if two finger panning will be enabled (default). False if two-finger panning will not be enabled.

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setTwoFingerPinchRotateEnabled (boolean enable)
```

Deprecated: As of release 2.0.

This gesture is disabled at all times.

Sets whether the two-finger pinch-and-rotate interaction is enabled for this MapGesture . If true, pinch and rotate can happen concurrently. If false, they will be made mutually exclusive.

Parameters:

- **enable**

true if two finger pinch an rotate will be enabled; false if two finger pinch and rotate will not be enabled.

Returns:

The modified MapGesture itself.

```
public abstract MapGesture setTwoFingerTapEnabled (boolean enabled)
```

Sets whether two-finger tap gestures are enabled or disabled for this MapGesture .

Parameters:

- **enabled**

A boolean specifying whether two-finger tap is enabled

Returns:

The modified MapGesture itself.

OnGestureListener

The interface `OnGestureListener` is a member of `com.here.android.mpa.mapping.MapGesture`.

Interface Summary

public static abstract interface **MapGesture.OnGestureListener**

Event Listener interface for gesture events.

[For complete information, see the section [Interface Details](#)]

Nested Class Summary

Table 71: Nested Classes in OnGestureListener

Nested Classes
<pre>public static abstract class MapGesture.OnGestureListener.OnGestureListenerAdapter</pre> <p>Default implementation for the OnGestureListener interface.</p>

Method Summary

Table 72: Methods in OnGestureListener

Methods
<pre>public abstract boolean onDoubleTapEvent (PointF p)</pre> <p>A callback indicating that a user has performed a double tap gesture on a map.</p>
<pre>public abstract boolean onLongPressEvent (PointF p)</pre> <p>A callback indicating that a user has performed a long-press gesture on a map.</p>
<pre>public abstract void onLongPressRelease ()</pre> <p>A callback indicating that a user has released a long-press gesture on a map.</p>
<pre>public abstract boolean onMapObjectsSelected (java.util.List <ViewObject> objects)</pre> <p>A callback indicating that at least one <code>ViewObject</code> has been selected as a result of a user tapping on the map.</p>
<pre>public abstract void onMultiFingerManipulationEnd ()</pre> <p>A callback indicating the user has removed all or all-except-one fingers from the screen.</p>
<pre>public abstract void onMultiFingerManipulationStart ()</pre> <p>A callback indicating the user has put more than one finger onto the screen.</p>
<pre>public abstract void onPanEnd ()</pre> <p>A callback indicating the user has lifted up their finger and stopped panning.</p>
<pre>public abstract void onPanStart ()</pre> <p>A callback indicating the user has put one finger on the screen and moved their finger to trigger panning.</p>
<pre>public abstract void onPinchLocked ()</pre>

Methods

A callback indicating that a user has pinched enough to be recognized as the two-finger zoom gesture.

```
public abstract boolean onPinchZoomEvent (float scaleFactor, PointF p)
```

A callback indicating that a user has performed a pinch-to-zoom gesture on a map.

```
public abstract boolean onRotateEvent (float rotateAngle)
```

A callback indicating that a user has performed a rotate gesture on a map.

```
public abstract void onRotateLocked ()
```

A callback indicating that a user has rotated enough to be recognized as the two-finger rotation gesture.

```
public abstract boolean onTapEvent (PointF p)
```

A callback indicating that a user has performed a single-tap gesture on a map.

```
public abstract boolean onTiltEvent (float angle)
```

A callback indicating that a user has performed a two-finger-tilt gesture on a map.

```
public abstract boolean onTwoFingerTapEvent (PointF p)
```

A callback indicating that a user has performed a two-finger tap gesture on a map.

Interface Details

Event Listener interface for gesture events. Please use [MapGesture.OnGestureListener](#) if all events are necessary and [MapGesture.OnGestureListener.OnGestureListenerAdapter](#) if some events are required. This interface can be added via [MapGesture.addOnGestureListener\(OnGestureListener\)](#) and removed via [MapGesture.removeOnGestureListener\(OnGestureListener\)](#). Please see [MapGesture](#) for a full set of configurable APIs.

Method Details

```
public abstract boolean onDoubleTapEvent (PointF p)
```

A callback indicating that a user has performed a double tap gesture on a map.

Parameters:

- **p**

A `PointF` representing the on-screen point of the double-tap gesture

Returns:

True if consumed (which prevents the default map zoom-in behavior), false otherwise

```
public abstract boolean onLongPressEvent (PointF p)
```

A callback indicating that a user has performed a long-press gesture on a map.

If a [MapMarker](#) with dragging enabled is located at the same location, returning `true` for this method will nullify that setting.

Parameters:

- **p**

A `PointF` representing the on-screen point where a user has long-pressed

Returns:

True if consumed (which prevents the default map move-to-here behavior), false otherwise

See also:

[setDraggable\(boolean\)](#)

```
public abstract void onLongPressRelease ()
```

A callback indicating that a user has released a long-press gesture on a map.

This callback may also occur when the user has panned around the map.

```
public abstract boolean onMapObjectsSelected (java.util.List <ViewObject> objects)
```

A callback indicating that at least one [*ViewObject*](#) has been selected as a result of a user tapping on the map.

If the user tapping on the map results in [*ViewObject*](#) selection (there are selectable objects located at the tap point), this callback will be made after [*onTapEvent\(PointF\)*](#), if and only if, `false` is returned for that callback.

Parameters:

- **objects**

A list of selected `ViewObject` objects

Returns:

`true` if consumed, `false` otherwise

See also:

[getSelectedObjects\(PointF\)](#)

```
public abstract void onMultiFingerManipulationEnd ()
```

A callback indicating the user has removed all or all-except-one fingers from the screen.

```
public abstract void onMultiFingerManipulationStart ()
```

A callback indicating the user has put more than one finger onto the screen. Pinch, Rotate or Tilt manipulation events may also be called back.

See also:

[onTiltEvent\(float\)](#)

[onRotateEvent\(float\)](#)

`onPinchZoomEvent(float, PointF)`

```
public abstract void onPanEnd ()
```

A callback indicating the user has lifted up their finger and stopped panning.

```
public abstract void onPanStart ()
```

A callback indicating the user has put one finger on the screen and moved their finger to trigger panning.

```
public abstract void onPinchLocked ()
```

A callback indicating that a user has pinched enough to be recognized as the two-finger zoom gesture. This callback will only occur if `MapGesture` is set to exclusive mode from `setTwoFingerPinchRotateEnabled(boolean)`

See also:

`setTwoFingerPinchRotateEnabled(boolean)`

```
public abstract boolean onPinchZoomEvent (float scaleFactor, PointF p)
```

A callback indicating that a user has performed a pinch-to-zoom gesture on a map.

Parameters:

- **scaleFactor**

A scale factor relative to the points of the two simultaneous touches at separate screen coordinates

- **p**

A `PointF` representing the on-screen point of the pinch gesture

Returns:

True if consumed (which prevents the default map zoom-in or zoom-out behavior), false otherwise

```
public abstract boolean onRotateEvent (float rotateAngle)
```

A callback indicating that a user has performed a rotate gesture on a map.

Parameters:

- **rotateAngle**

An angle, in degrees, of the user interaction gesture since its last change

Returns:

True if consumed (which prevents the default map rotate-to-here behavior), false otherwise

```
public abstract void onRotateLocked ()
```

A callback indicating that a user has rotated enough to be recognized as the two-finger rotation gesture. This callback will only occur if `MapGesture` is set to exclusive mode from `setTwoFingerPinchRotateEnabled(boolean)`

See also:

[setTwoFingerPinchRotateEnabled\(boolean\)](#)

```
public abstract boolean onTapEvent (PointF p)
```

A callback indicating that a user has performed a single-tap gesture on a map.

If `true` is returned from this callback, no `onMapObjectsSelected(List)` callback will be made to any gesture subscribers even if any objects are found at the screen point.

Parameters:

- **p**

A `PointF` representing the on-screen point of the single-tap gesture

Returns:

`true` if consumed (which prevents the default pan-to-here behavior), `false` otherwise.

See also:

[getSelectedObjects\(PointF\)](#)

```
public abstract boolean onTiltEvent (float angle)
```

A callback indicating that a user has performed a two-finger-tilt gesture on a map.

Parameters:

- **angle**

An angle, in degrees, to which the map tilt is to change.

Returns:

`True` if consumed (which prevents the default map tilt-to-here behavior), `false` otherwise

```
public abstract boolean onTwoFingerTapEvent (PointF p)
```

A callback indicating that a user has performed a two-finger tap gesture on a map.

Parameters:

- **p**

A `PointF` representing the on-screen point where the two-finger tap occurred

Returns:

`True` if consumed (which prevents the default map zoom-out behavior), `false` otherwise

OnGestureListenerAdapter

The class `OnGestureListenerAdapter` is a member of `com.here.android.mpa.mapping.MapGesture.OnGestureListener`.

Class Summary

public static abstract class `MapGesture.OnGestureListener.OnGestureListenerAdapter`

 implements `com.here.android.mpa.mapping.MapGesture.OnGestureListener`

 extends `java.lang.Object`

Default implementation for the `OnGestureListener` interface.

[For complete information, see the section [Class Details](#)]

See also:

[MapGesture.OnGestureListener](#)

Constructor Summary

Table 73: Constructors in `OnGestureListenerAdapter`

Constructors
<code>OnGestureListenerAdapter ()</code>

Method Summary

Table 74: Methods in `OnGestureListenerAdapter`

Methods
<pre>public boolean onDoubleTapEvent (PointF p)</pre> <p>A callback indicating that a user has performed a double tap gesture on a map. This method overrides mapping.MapGesture.OnGestureListener.onDoubleTapEvent(PointF)</p>
<pre>public boolean onLongPressEvent (PointF p)</pre> <p>A callback indicating that a user has performed a long-press gesture on a map. This method overrides mapping.MapGesture.OnGestureListener.onLongPressEvent(PointF)</p>
<pre>public void onLongPressRelease ()</pre> <p>A callback indicating that a user has released a long-press gesture on a map. This method overrides mapping.MapGesture.OnGestureListener.onLongPressRelease(void)</p>
<pre>public boolean onMapObjectsSelected (java.util.List <ViewObject> objects)</pre> <p>A callback indicating that at least one <code>ViewObject</code> has been selected as a result of a user tapping on the map. This method overrides mapping.MapGesture.OnGestureListener.onMapObjectsSelected(List)</p>
<pre>public void onMultiFingerManipulationEnd ()</pre>

Methods

A callback indicating the user has removed all or all-except-one fingers from the screen.

This method overrides [mapping.MapGesture.OnGestureListener.onMultiFingerManipulationEnd\(void\)](#)

```
public void onMultiFingerManipulationStart ()
```

A callback indicating the user has put more than one finger onto the screen.

This method overrides [mapping.MapGesture.OnGestureListener.onMultiFingerManipulationStart\(void\)](#)

```
public void onPanEnd ()
```

A callback indicating the user has lifted up their finger and stopped panning.

This method overrides [mapping.MapGesture.OnGestureListener.onPanEnd\(void\)](#)

```
public void onPanStart ()
```

A callback indicating the user has put one finger on the screen and moved their finger to trigger panning.

This method overrides [mapping.MapGesture.OnGestureListener.onPanStart\(void\)](#)

```
public void onPinchLocked ()
```

A callback indicating that a user has pinched enough to be recognized as the two-finger zoom gesture.

This method overrides [mapping.MapGesture.OnGestureListener.onPinchLocked\(void\)](#)

```
public boolean onPinchZoomEvent (float scaleFactor, PointF p)
```

A callback indicating that a user has performed a pinch-to-zoom gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onPinchZoomEvent\(float, PointF\)](#)

```
public boolean onRotateEvent (float rotateAngle)
```

A callback indicating that a user has performed a rotate gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onRotateEvent\(float\)](#)

```
public void onRotateLocked ()
```

A callback indicating that a user has rotated enough to be recognized as the two-finger rotation gesture.

This method overrides [mapping.MapGesture.OnGestureListener.onRotateLocked\(void\)](#)

```
public boolean onTapEvent (PointF p)
```

A callback indicating that a user has performed a single-tap gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onTapEvent\(PointF\)](#)

```
public boolean onTiltEvent (float angle)
```

A callback indicating that a user has performed a two-finger-tilt gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onTiltEvent\(float\)](#)

```
public boolean onTwoFingerTapEvent (PointF p)
```

A callback indicating that a user has performed a two-finger tap gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onTwoFingerTapEvent\(PointF\)](#)

Class Details

Default implementation for the OnGestureListener interface. Users may use this abstract class and overload specific methods to have a smaller code footprint.

See also:

[MapGesture.OnGestureListener](#)

Constructor Details

OnGestureListenerAdapter ()

Method Details

public boolean onDoubleTapEvent (PointF p)

A callback indicating that a user has performed a double tap gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onDoubleTapEvent\(PointF\)](#)

Parameters:

- **p**

public boolean onLongPressEvent (PointF p)

A callback indicating that a user has performed a long-press gesture on a map.

If a [MapMarker](#) with dragging enabled is located at the same location, returning `true` for this method will nullify that setting.

This method overrides [mapping.MapGesture.OnGestureListener.onLongPressEvent\(PointF\)](#)

Parameters:

- **p**

public void onLongPressRelease ()

A callback indicating that a user has released a long-press gesture on a map.

This callback may also occur when the user has panned around the map.

This method overrides [mapping.MapGesture.OnGestureListener.onLongPressRelease\(void\)](#)

public boolean onMapObjectsSelected (java.util.List <ViewObject> objects)

A callback indicating that at least one [ViewObject](#) has been selected as a result of a user tapping on the map.

If the user tapping on the map results in [ViewObject](#) selection (there are selectable objects located at the tap point), this callback will be made after [onTapEvent\(PointF\)](#), if and only if, `false` is returned for that callback.

This method overrides [mapping.MapGesture.OnGestureListener.onMapObjectsSelected\(List\)](#)

Parameters:

- **objects**

```
public void onMultiFingerManipulationEnd ()
```

A callback indicating the user has removed all or all-except-one fingers from the screen.

This method overrides [*mapping.MapGesture.OnGestureListener.onMultiFingerManipulationEnd\(void\)*](#)

```
public void onMultiFingerManipulationStart ()
```

A callback indicating the user has put more than one finger onto the screen. Pinch, Rotate or Tilt manipulation events may also be called back.

This method overrides [*mapping.MapGesture.OnGestureListener.onMultiFingerManipulationStart\(void\)*](#)

```
public void onPanEnd ()
```

A callback indicating the user has lifted up their finger and stopped panning.

This method overrides [*mapping.MapGesture.OnGestureListener.onPanEnd\(void\)*](#)

```
public void onPanStart ()
```

A callback indicating the user has put one finger on the screen and moved their finger to trigger panning.

This method overrides [*mapping.MapGesture.OnGestureListener.onPanStart\(void\)*](#)

```
public void onPinchLocked ()
```

A callback indicating that a user has pinched enough to be recognized as the two-finger zoom gesture. This callback will only occur if MapGesture is set to exclusive mode from [*setTwoFingerPinchRotateEnabled\(boolean\)*](#)

This method overrides [*mapping.MapGesture.OnGestureListener.onPinchLocked\(void\)*](#)

```
public boolean onPinchZoomEvent (float scaleFactor, PointF p)
```

A callback indicating that a user has performed a pinch-to-zoom gesture on a map.

This method overrides [*mapping.MapGesture.OnGestureListener.onPinchZoomEvent\(float, PointF\)*](#)

Parameters:

- **scaleFactor**
- **p**

```
public boolean onRotateEvent (float rotateAngle)
```

A callback indicating that a user has performed a rotate gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onRotateEvent\(float\)](#)

Parameters:

- **rotateAngle**

```
public void onRotateLocked ()
```

A callback indicating that a user has rotated enough to be recognized as the two-finger rotation gesture. This callback will only occur if `MapGesture` is set to exclusive mode from [setTwoFingerPinchRotateEnabled\(boolean\)](#)

This method overrides [mapping.MapGesture.OnGestureListener.onRotateLocked\(void\)](#)

```
public boolean onTapEvent (PointF p)
```

A callback indicating that a user has performed a single-tap gesture on a map.

If `true` is returned from this callback, no [onMapObjectsSelected\(List\)](#) callback will be made to any gesture subscribers even if any objects are found at the screen point.

This method overrides [mapping.MapGesture.OnGestureListener.onTapEvent\(PointF\)](#)

Parameters:

- **p**

```
public boolean onTiltEvent (float angle)
```

A callback indicating that a user has performed a two-finger-tilt gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onTiltEvent\(float\)](#)

Parameters:

- **angle**

```
public boolean onTwoFingerTapEvent (PointF p)
```

A callback indicating that a user has performed a two-finger tap gesture on a map.

This method overrides [mapping.MapGesture.OnGestureListener.onTwoFingerTapEvent\(PointF\)](#)

Parameters:

- **p**

MapMarker

The class `MapMarker` is a member of [com.here.android.mpa.mapping](#).

Class Summary

public final class **MapMarker**

extends com.here.android.mpa.mapping.MapObject, com.here.android.mpa.common.ViewObject, java.lang.Object

Represents a marker used to display an icon at a geographical position on a map.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 75: Nested Classes in MapMarker

Nested Classes
<pre>public static abstract interface MapMarker.OnDragListener</pre> <p>Callback interface for drag events on <code>MapMarker</code> objects.</p>

Constructor Summary

Table 76: Constructors in MapMarker

Constructors
<code>MapMarker ()</code> Creates a default <code>MapMarker</code> .
<code>MapMarker (float hue)</code> Creates a default <code>MapMarker</code> .
<code>MapMarker (GeoCoordinate coordinate, Image image)</code> Creates a <code>MapMarker</code> with a specified <code>GeoCoordinate</code> and <code>Image</code> .

Method Summary

Table 77: Methods in MapMarker

Methods
<code>public PointF getAnchorPoint ()</code> Returns the anchor point for this <code>MapMarker</code> .
<code>public GeoCoordinate getCoordinate ()</code> Returns the current map <code>GeoCoordinate</code> for this <code>MapMarker</code> .
<code>public String getDescription ()</code> Gets the current description text.
<code>public Image getIcon ()</code> Returns the icon image for this <code>MapMarker</code> .
<code>public int getInfoBubbleHashCode ()</code>

Methods

Returns non-zero hash code of the info bubble if it is showing.

```
public String getTitle ()
```

Gets the current title to be used by the default info bubble.

```
public float getTransparency ()
```

Gets the current transparency for the icon

```
public Type getType ()
```

```
public void hideInfoBubble ()
```

Hides the info bubble if it's currently showing.

```
public boolean isDraggable ()
```

Returns a boolean indicating whether the marker is draggable.

```
public boolean isInfoBubbleVisible ()
```

Returns a boolean indicating if the info bubble is currently displayed on this marker.

```
public MapMarker setAnchorPoint (PointF anchor)
```

Sets an anchor point for this MapMarker .

```
public MapMarker setCoordinate (GeoCoordinate coordinate)
```

Sets a map GeoCoordinate for this MapMarker .

```
public MapMarker setDescription (String description)
```

Sets the description text.

```
public MapMarker setDraggable (boolean isDraggable)
```

Sets whether this marker is draggable or not.

```
public MapMarker setIcon (Image icon)
```

Sets an icon image for this MapMarker .

```
public MapMarker setTitle (String title)
```

Sets a title to be used by the default info bubble.

```
public boolean setTransparency (float alpha)
```

Sets a transparency level, within the range of [0..1], for the icon.

```
public void showInfoBubble ()
```

Displays the default info bubble if setTitle (String) has been set to something non-null.

Class Details

Represents a marker used to display an icon at a geographical position on a map. The map handles proper placement of icons on the screen as well as panning and rotation.

MapMarker objects can be selected by application users.

Constructor Details

MapMarker ()

Creates a default *MapMarker*. The marker will contain the default marker image.

See also:

[MapMarker\(float\)](#)

[MapMarker\(GeoCoordinate, Image\)](#)

MapMarker (float hue)

Creates a default *MapMarker*. The marker will contain a colorization of the default marker image.

Parameters:

- **hue**

The hue of the marker. Value must be greater or equal to 0 and less than 360.

See also:

[MapMarker\(\)](#)

[MapMarker\(GeoCoordinate, Image\)](#)

MapMarker (GeoCoordinate coordinate, Image image)

Creates a *MapMarker* with a specified *GeoCoordinate* and *Image*.

Parameters:

- **coordinate**
A *GeoCoordinate* representing the map coordinates of the marker
- **image**
An *Image* used to display the marker

See also:

[MapMarker\(\)](#)

[MapMarker\(float\)](#)

Method Details

public PointF getAnchorPoint ()

Returns the anchor point for this *MapMarker*.

The marker is drawn with the specified pixel offset from its [getCoordinate\(\)](#) position. To clear an anchor set previously, pass a *PointF* to this method with an X-coordinate equal to half the width of the marker and a Y-coordinate equal to half the height of the marker.

By default, there is no offset and the MapMarker is centered in the center of the icon image.

```
public GeoCoordinate getCoordinate ()
```

Returns the current map GeoCoordinate for this MapMarker .

Returns:

The current GeoCoordinate location

```
public String getDescription ()
```

Gets the current description text.

Returns:

The current description. Can be null if it has not been set.

```
public Image getIcon ()
```

Returns the icon image for this MapMarker .

Returns:

An Image representing this marker's icon

```
public int getInfoBubbleHashCode ()
```

Returns non-zero hash code of the info bubble if it is showing.

Use this hash code to compare against the hash code of the objects returned by [onMapObjectsSelected\(List\)](#) to determine if object selected is an info bubble. If so, call [hideInfoBubble\(\)](#) to close the info bubble.

Returns:

The hash code of the info bubble that is visible. 0 if the info bubble is not showing.

See also:

[onMapObjectsSelected\(List<ViewObject>\)](#)

```
public String getTitle ()
```

Gets the current title to be used by the default info bubble.

Returns:

The current title. Can be null if it has not been set.

```
public float getTransparency ()
```

Gets the current transparency for the icon

The transparency level is only precise to two decimal places due to numerical operations performed internally when rendering the map.

Returns:

The current transparency of the icon

```
public Type getType ()
```

```
public void hideInfoBubble ()
```

Hides the info bubble if it's currently showing.

```
public boolean isDraggable ()
```

Returns a boolean indicating whether the marker is draggable.

Returns:

True if the marker is draggable, false otherwise.

```
public boolean isInfoBubbleVisible ()
```

Returns a boolean indicating if the info bubble is currently displayed on this marker.

Returns:

True if the info bubble is displayed, false otherwise.

```
public MapMarker setAnchorPoint (PointF anchor)
```

Sets an anchor point for this MapMarker .

The marker is drawn with the specified pixel offset from its [getCoordinate\(\)](#) position. To clear an anchor set previously, pass a PointF to this method with an X-coordinate equal to half the width of the marker and a Y-coordinate equal to half the height of the marker.

By default, there is no offset and the MapMarker is centered in the center of the icon image.

Parameters:

- **anchor**

A PointF relative to the top-left corner of the MapMarker.

Returns:

The updated MapMarker itself.

```
public MapMarker setCoordinate (GeoCoordinate coordinate)
```

Sets a map GeoCoordinate for this MapMarker .

Parameters:

- **coordinate**

Desired GeoCoordinate location for this marker

Returns:

The updated MapMarker itself.

```
public MapMarker setDescription (String description)
```

Sets the description text. This will be shown below the title in normal typeface.

Parameters:

- **description**

The description to be set.

Returns:

The updated MapMarker itself.

```
public MapMarker setDraggable (boolean isDraggable)
```

Sets whether this marker is draggable or not. By default, the marker is not draggable.

If any user overridden methods of *onLongPressEvent(PointF)* or *onDoubleTapEvent(PointF)* that is registered with *MapGesture* returns `true` , the *MapMarker* will ignore any drag events even if the marker is set to enable dragging.

Parameters:

- **isDraggable**

`true` if the marker is draggable, `false` otherwise.

Returns:

The updated MapMarker itself.

See also:

MapGesture

```
public MapMarker setIcon (Image icon)
```

Sets an icon image for this MapMarker .

Parameters:

- **icon**

An Image representing this marker's icon

Returns:

The updated MapMarker itself.

```
public MapMarker setTitle (String title)
```

Sets a title to be used by the default info bubble.

Parameters:

- **title**

The title to set.

Returns:

The updated MapMarker itself.

```
public boolean setTransparency (float alpha)
```

Sets a transparency level, within the range of [0..1], for the icon.

Parameters:

- **alpha**

Desired alpha value for the icon, 0 for fully transparent, 1 for fully opaque (the default value is 1)

Returns:

True if successful, false otherwise.

```
public void showInfoBubble ()
```

Displays the default info bubble if `setTitle(String)` has been set to something non-null. This method should be called only after the MapMarker is added onto a [Map](#), otherwise making this call would make no effects. As only one info bubble can be displayed on the map at a time, thus when calling `showInfoBubble()` on a different MapMarker , the current info bubble on display will automatically be closed before the newly selected one is shown.

See also:

[addMapObject\(MapObject\)](#)

[addMapObjects\(List<MapObject>\)](#)

OnDragListener

The interface `OnDragListener` is a member of `com.here.android.mpa.mapping.MapMarker`.

Interface Summary

public static abstract interface **MapMarker.OnDragListener**

Callback interface for drag events on **MapMarker** objects.

[For complete information, see the section [Interface Details](#)]

Method Summary

Table 78: Methods in **OnDragListener**

Methods
<pre>public abstract void onMarkerDrag (MapMarker marker)</pre> <p>Called repeatedly while a marker is being dragged.</p>
<pre>public abstract void onMarkerDragEnd (MapMarker marker)</pre> <p>Called when a marker has finished being dragged.</p>
<pre>public abstract void onMarkerDragStart (MapMarker marker)</pre> <p>Called when a marker starts being dragged.</p>

Interface Details

Callback interface for drag events on **MapMarker** objects.

Method Details

public abstract void **onMarkerDrag (MapMarker marker)**

Called repeatedly while a marker is being dragged. The **MapMarker**'s location can be accessed through `getCoordinate()`.

Parameters:

- **marker**

The **MapMarker** that is being dragged.

public abstract void **onMarkerDragEnd (MapMarker marker)**

Called when a marker has finished being dragged. The **MapMarker**'s location can be accessed through `getCoordinate()`.

Parameters:

- **marker**

The **MapMarker** that is being dragged.

public abstract void **onMarkerDragStart (MapMarker marker)**

Called when a marker starts being dragged. The `MapMarker`'s location can be accessed via `getCoordinate()`. This position may be different to the position prior to the start of the drag because the marker is popped up above the touch point.

Parameters:

- **marker**

The `MapMarker` that is being dragged.

MapObject

The class `MapObject` is a member of [com.here.android.mpa.mapping](#).

Class Summary

public abstract class **MapObject**

extends [com.here.android.mpa.common.ViewObject](#), [java.lang.Object](#)

Represents a base class for all map-related objects that users can add to a [Map](#).

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 79: Nested Classes in `MapObject`

Nested Classes
<pre>public static final enumeration MapObject.Type</pre> <p>Represents values describing the types of <code>MapObject</code> objects that can be added to a <code>Map</code>.</p>

Method Summary

Table 80: Methods in `MapObject`

Methods
<pre>public boolean equals (Object obj)</pre>
<pre>public Type getBaseType ()</pre>
<pre>public MapContainer getParent ()</pre>
Returns the parent of this <code>MapObject</code> .
<pre>public abstract Type getType ()</pre>
Returns the type of object that this <code>MapObject</code> represents.
<pre>public BitSet getVisibleMask ()</pre>
Returns the visibility bit mask of this <code>MapObject</code>
<pre>public int getZIndex ()</pre>

Methods

Returns the current z-index (stacking order) of this `MapObject`.

```
public int hashCode ()
```

```
public boolean isVisible ()
```

Determines whether this `MapObject` is visible on the map.

```
public MapObject resetVisibleMask (boolean set)
```

Resets this `MapObject` to be either visible or invisible at all zoom levels.

```
public MapObject setVisible (boolean isVisible)
```

Sets whether the visibility of the `MapObject` on the map is enabled.

```
public MapObject setVisible (int level, boolean isVisible)
```

Sets whether this `MapObject` is visible for the specified zoom level, if enabled.

```
public MapObject setVisible (int levelStart, int levelEnd, boolean isVisible)
```

Sets whether this `MapObject` is visible for the specified range of zoom levels.

```
public MapObject setVisibleMask (int levelStart, int levelEnd)
```

Sets this `MapObject` to be visible at the specified range of zoom levels.

```
public MapObject setVisibleMask (int level)
```

Sets this `MapObject` to be visible at the specified zoom level.

```
public MapObject setZIndex (int index)
```

Sets a z-index (stacking order) value for this `MapObject`.

```
public MapObject unsetVisibleMask (int levelStart, int levelEnd)
```

Sets this `MapObject` to be invisible at the specified range of zoom levels.

```
public MapObject unsetVisibleMask (int level)
```

Sets this `MapObject` to be invisible at the specified zoom level.

Class Details

Represents a base class for all map-related objects that users can add to a `Map`.

This abstract class serves as a base for several more specified map object types, bundling their common properties. The types of map objects that you can add to a map include:

- [MapContainer](#)
- [MapCircle](#)
- [MapPolygon](#)
- [MapPolyline](#)
- [MapRoute](#)
- [MapMarker](#)

Objects extending this class, with the exception of `MapRoute` but including `MapContainer`, can be grouped within a `MapContainer` instance.

For a complete enumeration of available `MapObject` types, refer to [`MapObject.Type`](#).

Method Details

```
public boolean equals (Object obj)
```

Parameters:

- `obj`

```
public Type getBaseType ()
```

```
public MapContainer getParent ()
```

Returns the parent of this `MapObject`.

Returns:

The parent `MapContainer`. If the current object is the root object, `null` is returned.

```
public abstract Type getType ()
```

Returns the type of object that this `MapObject` represents.

Returns:

One of the `MapObject.Type` values

```
public BitSet getVisibleMask ()
```

Returns the visibility bit mask of this `MapObject`

Returns:

`BitSet` which defines the visibility bit mask of the `MapObject`

```
public int getZIndex ()
```

Returns the current z-index (stacking order) of this `MapObject`. A higher z-index indicates that the object is positioned more in front.

Returns:

The current ordinal z-index number

```
public int hashCode ()
```

```
public boolean isVisible ()
```

Determines whether this `MapObject` is visible on the map.

Returns:

True if this `MapObject` is visible, false otherwise

```
public MapObject resetVisibleMask (boolean set)
```

Resets this `MapObject` to be either visible or invisible at all zoom levels. This method is equivalent to `setVisible(minimumZoom, maximumZoom, false)`. It can only be used after the `MapObject` has been added to the `Map`. By default, the visibility bit masks for all zoom levels are set to true.

This `MapObject` visibility mask is only applicable if [setVisible\(boolean\)](#) is also set to `true`.

Parameters:

- **set**

True to set map object as visible; false otherwise.

Returns:

The updated `MapObject` itself.

See also:

[setVisible\(boolean\)](#)

```
public MapObject setVisible (boolean isVisible)
```

Sets whether the visibility of the `MapObject` on the map is enabled. Whether the `MapObject` is actually visible depends on whether the visible mask is set for the desired zoom level.

This setting is independent but takes priority over the per-zoom level settings. For example, you can call `setVisible(0, 6, true)` and then call `setVisible(false)`, and the object will not appear on the map. Calling `setVisible(false)` will then cause the object to be visible in zoom levels 0 to 6.

Parameters:

- **isVisible**

A boolean variable specifying whether this `MapObject` is visible

Returns:

The updated `MapObject` itself.

See also:

[setVisible\(int, boolean\)](#)

[setVisible\(int, int, boolean\)](#)

```
public MapObject setVisible (int level, boolean isVisible)
```

Sets whether this `MapObject` is visible for the specified zoom level, if enabled. This method can only be used after the `MapObject` has been added to the `Map`. By default, the visibility bit masks for all zoom levels are set to true.

The `MapObject` is visible/invisible at the specified zoom level only if the `setVisible(boolean)` is also set to true.

Parameters:

- **level**
A zoom level
- **isVisible**
A boolean variable specifying whether this `MapObject` is visible

Returns:

The updated `MapObject` itself.

See also:

`setVisible(boolean)`

`setVisible(int, boolean)`

```
public MapObject setVisible (int levelStart, int levelEnd, boolean  
isVisible)
```

Sets whether this `MapObject` is visible for the specified range of zoom levels. This method can only be used after the `MapObject` has been added to the `Map`. By default, the visibility bit masks for all zoom levels are set to true.

The `MapObject` is visible/invisible at the specified zoom levels only if the `setVisible(boolean)` is also set to true.

Parameters:

- **levelStart**
A starting zoom level of the range to show or hide, inclusive
- **levelEnd**
An ending zoom level of the range to show or hide, inclusive
- **isVisible**
A boolean variable specifying whether this `MapObject` is visible

Returns:

The updated `MapObject` itself.

See also:

`setVisible(boolean)`

`setVisible(int, boolean)`

```
public MapObject setVisibleMask (int levelStart, int levelEnd)
```

Sets this `MapObject` to be visible at the specified range of zoom levels. This method is equivalent to `setVisible(levelStart, levelEnd, true)`. It can only be used after the `MapObject` has been added to the `Map`. By default, the visibility bit masks for all zoom levels are set to true.

The `MapObject` is visible at the specified zoom level only if the visibility of the `MapObject` is also set to true via [setVisible\(boolean\)](#).

Parameters:

- **levelStart**
A starting zoom level of the range
- **levelEnd**
An ending zoom level of the range

Returns:

The updated `MapObject` itself.

See also:

- [setVisible\(boolean\)](#)
[setVisibleMask\(int, int\)](#)
[unsetVisibleMask\(int\)](#)
[unsetVisibleMask\(int, int\)](#)
[getVisibleMask\(\)](#)

```
public MapObject setVisibleMask (int level)
```

Sets this `MapObject` to be visible at the specified zoom level. This method is equivalent to `setVisible(level, true)`. It can only be used after the `MapObject` has been added to the `Map`. By default, the visibility bit masks for all zoom levels are set to true.

The `MapObject` is visible at the specified zoom level only if the visibility of the `MapObject` is also set to true via [setVisible\(boolean\)](#).

Parameters:

- **level**
A zoom level

Returns:

The updated `MapObject` itself.

See also:

- [setVisible\(boolean\)](#)
[setVisibleMask\(int, int\)](#)
[unsetVisibleMask\(int\)](#)
[unsetVisibleMask\(int, int\)](#)

`getVisibleMask()`

```
public MapObject setZIndex (int index)
```

Sets a z-index (stacking order) value for this MapObject .

Parameters:

- **index**

A new z-index value for this MapObject , a 16-bit int within the range of [0..65535]

Returns:

The updated MapObject itself.

Throws:

- **IllegalArgumentException**

If index is not within the valid range.

```
public MapObject unsetVisibleMask (int levelStart, int levelEnd)
```

Sets this MapObject to be invisible at the specified range of zoom levels. This method is equivalent to `setVisible(levelStart, levelEnd, false)` . It can only be used after the MapObject has been added to the [Map](#). By default, the visibility bit masks for all zoom levels are set to true.

Parameters:

- **levelStart**
A starting zoom level of the range
- **levelEnd**
An ending zoom level of the range

Returns:

The updated MapObject itself.

See also:

[setVisible\(boolean\)](#)

[unsetVisibleMask\(int\)](#)

[setVisibleMask\(int\)](#)

[setVisibleMask\(int, int\)](#)

[getVisibleMask\(\)](#)

```
public MapObject unsetVisibleMask (int level)
```

Sets this `MapObject` to be invisible at the specified zoom level. This method is equivalent to `setVisible(level, false)`. It can only be used after the `MapObject` has been added to the `Map`. By default, the visibility bit masks for all zoom levels are set to true.

Parameters:

- `level`

A zoom level

Returns:

The updated `MapObject` itself.

See also:

`setVisible(boolean)`

`unsetVisibleMask(int, int)`

`setVisibleMask(int)`

`setVisibleMask(int, int)`

`getVisibleMask()`

Type

The enumeration `Type` is a member of `com.here.android.mpa.mapping.MapObject`.

Enumeration Summary

public static final enumeration `MapObject.Type`

extends java.lang.Enum, java.lang.Object

Represents values describing the types of `MapObject` objects that can be added to a `Map`.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 81: Enum Constants in Type

Fields
<pre>public static final Type UNKNOWN</pre> <p>An unknown type of <code>MapObject</code>.</p>
<pre>public static final Type MARKER</pre> <p>A <code>MapMarker</code>.</p>
<pre>public static final Type POLYGON</pre> <p>A <code>MapPolygon</code>.</p>
<pre>public static final Type POLYLINE</pre>

Fields

A [MapPolyline](#).

```
public static final Type ROUTE
```

A [MapRoute](#).

```
public static final Type CONTAINER
```

A [MapContainer](#).

```
public static final Type CIRCLE
```

A [MapCircle](#).

Method Summary

Table 82: Methods in Type

Methods

```
public static Type valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static MapObject.Type[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values describing the types of [MapObject](#) objects that can be added to a [Map](#).

Enum Constant Details

```
public static final Type UNKNOWN
```

An unknown type of [MapObject](#).

```
public static final Type MARKER
```

A [MapMarker](#).

```
public static final Type POLYGON
```

A [MapPolygon](#).

```
public static final Type POLYLINE
```

A [MapPolyline](#).

```
public static final Type ROUTE
```

A [MapRoute](#).

```
public static final Type CONTAINER
```

A [MapContainer](#).

```
public static final Type CIRCLE
```

A [MapCircle](#).

Method Details

```
public static Type valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static MapObject.Type[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

MapPolygon

The class `MapPolygon` is a member of [com.here.android.mpa.mapping](#) .

Class Summary

```
public final class MapPolygon
```

```
extends com.here.android.mpa.mapping.MapObject, com.here.android.mpa.common.ViewObject,  
java.lang.Object
```

A graphical representation of a GeoPolygon to be rendered on a map.

[For complete information, see the section [Class Details](#)]

See also:

[GeoPolygon](#)

Constructor Summary

Table 83: Constructors in MapPolygon

Constructors
<code>MapPolygon (GeoPolygon polygon)</code> Creates a MapPolygon , which is a MapObject in the shape of a polygon.

Method Summary

Table 84: Methods in MapPolygon

Methods
<code>public int getFillColor ()</code> Returns the current fill color for this MapPolygon , returning an ARGB (Alpha/Red/Green/Blue) integer color value.
<code>public int getLineColor ()</code> Returns the current border line color for this MapPolygon , returning an ARGB (Alpha/Red/Green/Blue) integer color value.
<code>public int getLineWidth ()</code> Returns the current border line width for the MapPolygon , in pixels.
<code>public Type getType ()</code>
<code>public MapPolygon setFillColor (int color)</code> Sets a fill color for this MapPolygon , using an ARGB (Alpha/Red/Green/Blue) integer color value.
<code>public MapPolygon setGeoPolygon (GeoPolygon polygon)</code> Changes the GeoPolygon rendered by this MapPolygon .
<code>public MapPolygon setLineColor (int color)</code> Sets a border line color for this MapPolygon , using an ARGB (Alpha/Red/Green/Blue) integer color value.
<code>public MapPolygon setLineWidth (int width)</code> Sets a border line width, in pixels, for this MapPolygon , an int value within the [0..100] range.
<code>public MapObject setVisible (boolean isVisible)</code> Sets whether this MapObject is visible.

Class Details

A graphical representation of a GeoPolygon to be rendered on a map. In contrast to a *MapPolyline*, it is assumed that the last coordinate within the path is connected with the first coordinate, thereby constructing an enclosed geometry. Self-intersecting polygons rendering are not supported.

See also:

[GeoPolygon](#)

Constructor Details

`MapPolygon (GeoPolygon polygon)`

Creates a `MapPolygon`, which is a `MapObject` in the shape of a polygon. The default ARGB line/fill color is `0x00000000`.

Parameters:

- **polygon**

GeoPolygon to construct the `MapPolygon`

Throws:

- **IllegalArgumentException**

If the input `GeoPolygon` is invalid or it is a self-intersecting polygon.

Method Details

`public int getFillColor ()`

Returns the current fill color for this `MapPolygon`, returning an ARGB (Alpha/Red/Green/Blue) integer color value.

Returns:

The current ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255], with 0 meaning no contribution for that component, and 255 meaning 100% contribution

See also:

[android.graphics.Color](#)

`public int getLineColor ()`

Returns the current border line color for this `MapPolygon`, returning an ARGB (Alpha/Red/Green/Blue) integer color value.

Returns:

The current ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255], with 0 meaning no contribution for that component, and 255 meaning 100% contribution

See also:

[android.graphics.Color](#)

`public int getLineWidth ()`

Returns the current border line width for the `MapPolygon`, in pixels.

Returns:

The current width of the line defining the border of the MapPolygon

```
public Type getType ()
```

```
public MapPolygon setFillColor (int color)
```

Sets a fill color for this MapPolygon , using an ARGB (Alpha/Red/Green/Blue) integer color value.

Parameters:

- **color**

The ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255], with 0 meaning no contribution for that component, and 255 meaning 100% contribution

See also:

[android.graphics.Color](#)

```
public MapPolygon setGeoPolygon (GeoPolygon polygon)
```

Changes the GeoPolygon rendered by this MapPolygon .

Parameters:

- **polygon**

GeoPolygon to be rendered

Returns:

The updated MapPolygon itself.

Throws:

- **IllegalArgumentException**

If the input GeoPolygon is invalid or it is a self-intersecting polygon.

```
public MapPolygon setLineColor (int color)
```

Sets a border line color for this MapPolygon , using an ARGB (Alpha/Red/Green/Blue) integer color value.

Parameters:

- **color**

The ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255], with 0 meaning no contribution for that component, and 255 meaning 100% contribution.

Returns:

The updated @ code MapPolygon} itself.

See also:

[android.graphics.Color](#)

```
public MapPolygon setLineWidth (int width)
```

Sets a border line width, in pixels, for this MapPolygon , an int value within the [0..100] range.

Parameters:

- **width**

Width of the line defining the border of the MapPolygon

Returns:

The updated @ code MapPolygon} itself.

```
public MapObject setVisible (boolean isVisible)
```

Sets whether this MapObject is visible.

Parameters:

- **isVisible**

A boolean variable specifying whether this MapObject is visible

Returns:

The updated MapObject itself.

MapPolyline

The class *MapPolyline* is a member of [com.here.android.mpa.mapping](#) .

Class Summary

```
public final class MapPolyline
```

```
extends com.here.android.mpa.mapping.MapObject, com.here.android.mpa.common.ViewObject,  
java.lang.Object
```

A graphical representation of a [GeoPolyline](#) that can be rendered on a map.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 85: Constructors in MapPolyline

Constructors
MapPolyline (GeoPolyline polyline) Creates a MapPolyline , which is a MapObject in the shape of a polyline.

Method Summary

Table 86: Methods in MapPolyline

Methods
public int getLineColor () Gets the current line color for this MapPolyline , returning an ARGB (Alpha/Red/Green/Blue) integer color value.
public int getLineWidth () Returns the current line width for this MapPolyline , in pixels.
public Type getType ()
public MapPolyline setLineColor (int color) Sets a line color for this MapPolyline , using an ARGB (Alpha/Red/Green/Blue) integer color value.
public MapPolyline setLineWidth (int width) Sets a line width, in pixels, for this MapPolyline , an int value within the [0..100] range.

Class Details

A graphical representation of a [GeoPolyline](#) that can be rendered on a map. A MapPolyline has multiple points that combine to create its path.

Constructor Details

MapPolyline (GeoPolyline polyline)

Creates a MapPolyline , which is a MapObject in the shape of a polyline.

Parameters:

- **polyline**

GeoPolyline to construct the MapPolyline.

Method Details

public int getLineColor ()

Gets the current line color for this MapPolyline , returning an ARGB (Alpha/Red/Green/Blue) integer color value.

Returns:

The current ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255], with 0 meaning no contribution for that component and 255 meaning 100% contribution

See also:

[android.graphics.Color](#)

```
public int getLineWidth ()
```

Returns the current line width for this `MapPolyline`, in pixels.

Returns:

The current line width for this `MapPolyline`

```
public Type getType ()
```

```
public MapPolyline setLineColor (int color)
```

Sets a line color for this `MapPolyline`, using an ARGB (Alpha/Red/Green/Blue) integer color value. The default line color is `Color.BLUE`.

Parameters:

- `color`

The ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255] with 0 meaning no contribution for that component, and 255 meaning 100% contribution

Returns:

The updated `MapPolyline` itself.

See also:

[android.graphics.Color](#)

```
public MapPolyline setLineWidth (int width)
```

Sets a line width, in pixels, for this `MapPolyline`, an `int` value within the [0..100] range. By default, the line width is 1.

Parameters:

- `width`

Desired width of the line defining the `MapPolyline`

Returns:

The updated MapPolyline itself.

Throws:

- **IllegalArgumentException**

If width is out of range.

MapRasterTileSource

The class *MapRasterTileSource* is a member of [com.here.android.mpa.mapping](#).

Class Summary

public abstract class **MapRasterTileSource**

extends java.lang.Object

Represents an interface for a map raster tile source, used to render custom tile images on top of a [Map](#).

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 87: Nested Classes in MapRasterTileSource

Nested Classes
<pre>public static final class MapRasterTileSource.MapTileSystemHelper</pre> <p>Represents a helper class for converting raster tile coordinates to other tile system values.</p>
<pre>public static class MapRasterTileSource.TileResult</pre> <p>Result class for getting tile.</p>

Constructor Summary

Table 88: Constructors in MapRasterTileSource

Constructors
<pre>MapRasterTileSource ()</pre> <p>Constructor.</p>

Method Summary

Table 89: Methods in MapRasterTileSource

Methods
<pre>public GeoBoundingBox getBoundingArea ()</pre> <p>Gets the GeoBoundingBox representing the bounding area within which raster tiles are visible.</p>



Methods

```
public int getCacheExpiration ()
```

Get the cache expiration time

```
public byte[] getTile (int x, int y, int zoomLevel)
```

Deprecated: See [getTileWithError\(int, int, int\)](#)

Method to be overwritten by derived class to get a tile.

```
public TileResult getTileWithError (int x, int y, int zoomLevel)
```

Method to be overwritten by derived class to get a tile.

```
public int getZIndex ()
```

Gets the current z-index (stacking order) of the MapObject .

```
public abstract boolean hasTile (int x, int y, int zoomLevel)
```

Abstract method to be overwritten by derived class to check if a tile exists.

```
public MapRasterTileSource hideAtZoomLevel (int level)
```

Hides tiles at the specified zoom level of the Map .

```
public MapRasterTileSource hideAtZoomRange (int beginZoomLevel, int endZoomLevel)
```

Hides tiles within a given zoom level range of the Map .

```
public boolean isCachingEnabled ()
```

Get whether tiles are cached to the file system

```
public boolean isShownAtZoomLevel (int zoomLevel)
```

Determines whether raster tiles are shown at the specified zoom level of the Map .

```
public MapRasterTileSource setBoundingArea (GeoBoundingBox boundingBox)
```

Sets a bounding area within which raster tiles are visible.

```
public MapRasterTileSource setCacheExpiration (int expireSeconds)
```

Set the cache expiration time

```
public MapRasterTileSource setCachePrefix (String cache)
```

Set the cache file prefix

```
public MapRasterTileSource setCachingEnabled (boolean enabled)
```

Set whether tiles are cached to the file system.

```
public MapRasterTileSource setZIndex (int zIndex)
```

Sets a z-index (stacking order) value for the MapObject .

```
public MapRasterTileSource showAtZoomLevel (int level)
```

Shows tiles at the specified zoom level of the Map .

```
public MapRasterTileSource showAtZoomRange (int beginZoomLevel, int endZoomLevel)
```

Shows tiles within a given zoom level range of the Map .

Class Details

Represents an interface for a map raster tile source, used to render custom tile images on top of a *Map*.

Default attribute values are as follows:

```
Overlay type:      RasterTileOverlayType.BACKGROUND_REPLACEMENT
Transparency:     Transparency.TRANSPARENCY_ON
Tile size:        256x256 pixels
Valid zoom levels: 0-20 (all zoom levels)
Bounding area:    Top-Left coordinate: (-180.0, 90.0), Bottom-Right coordinate: (179.99, -90.0)
```

Note: the currently supported pixel format for the tile images is RGBA.

Constructor Details

`MapRasterTileSource ()`

Constructor.

Method Details

`public GeoBoundingBox getBoundingBox ()`

Gets the GeoBoundingBox representing the bounding area within which raster tiles are visible.

Returns:

The raster tile bounding area

`public int getCacheExpiration ()`

Get the cache expiration time

Returns:

Expire time in seconds

`public byte[] getTile (int x, int y, int zoomLevel)`

Deprecated: See `getTileWithError(int, int, int)`

Method to be overwritten by derived class to get a tile.

Parameters:

- `x`
- `y`
- `zoomLevel`

```
public TileResult getTileWithError (int x, int y, int zoomLevel)
```

Method to be overwritten by derived class to get a tile.

Parameters:

- **x**
X coordinate
- **y**
Y coordinate
- **zoomLevel**
zoom level

Returns:

A TileResult representing tile data and operation error. Check TileResult#getError() to check for error. Check TileResult#getData() to get RasterTile

```
public int getZIndex ()
```

Gets the current z-index (stacking order) of the MapObject .

Returns:

The current ordinal z-index number

```
public abstract boolean hasTile (int x, int y, int zoomLevel)
```

Abstract method to be overwritten by derived class to check if a tile exists.

Parameters:

- **x**
X coordinate
- **y**
Y coordinate
- **zoomLevel**
zoom level

Returns:

true if the tile exists, false otherwise

```
public MapRasterTileSource hideAtZoomLevel (int level)
```

Hides tiles at the specified zoom level of the Map .

Parameters:

- **level**



Zoom level at which tiles are to be hidden

Returns:

The updated `MapRasterTileSource` itself (see `getMaxZoomLevel()` and `getMinZoomLevel()` to retrieve the supported zoom level range).

```
public MapRasterTileSource hideAtZoomRange (int beginZoomLevel, int  
endZoomLevel)
```

Hides tiles within a given zoom level range of the `Map`.

Parameters:

- **beginZoomLevel**

Zoom level representing the beginning of the range within which tiles are to be hidden

- **endZoomLevel**

Zoom level representing the end of the range within which tiles are to be hidden

Returns:

The updated `MapRasterTileSource` itself (see `getMaxZoomLevel()` and `getMinZoomLevel()` to retrieve the supported zoom level range).

```
public boolean isCachingEnabled ()
```

Get whether tiles are cached to the file system

Returns:

True if tiles are cached. False otherwise.

```
public boolean isShownAtZoomLevel (int zoomLevel)
```

Determines whether raster tiles are shown at the specified zoom level of the `Map`.

Parameters:

- **zoomLevel**

Zoom level to check for raster tile visibility

Returns:

True if raster tiles are shown at the specified zoom level, false otherwise (see `getZoomLevel()` to retrieve the current zoom level of the `Map`).

```
public MapRasterTileSource setBoundingArea (GeoBoundingBox boundingBox)
```

Sets a bounding area within which raster tiles are visible.

Parameters:

- **boundingBox**

A [GeoBoundingBox](#) representing the bounding area of visible raster tiles

Returns:

The updated MapRasterTileSource itself.

```
public MapRasterTileSource setCacheExpiration (int expireSeconds)
```

Set the cache expiration time

Parameters:

- **expireSeconds**

Expire time in seconds

Returns:

The updated MapRasterTileSource itself.

```
public MapRasterTileSource setCachePrefix (String cache)
```

Set the cache file prefix

Parameters:

- **cache**

Prefix tag

Returns:

The updated MapRasterTileSource itself.

```
public MapRasterTileSource setCachingEnabled (boolean enabled)
```

Set whether tiles are cached to the file system.

Parameters:

- **enabled**

True to cache, False otherwise

Returns:

The updated MapRasterTileSource itself.

```
public MapRasterTileSource setZIndex (int zIndex)
```

Sets a z-index (stacking order) value for the MapObject .

Parameters:

- **zIndex**

A new z-index value for the `MapObject`, a 16-bit `int` within the range of [0..655xx]

Returns:

The updated `MapRasterTileSource` itself.

```
public MapRasterTileSource showAtZoomLevel (int level)
```

Shows tiles at the specified zoom level of the Map .

Parameters:

- **level**

Zoom level at which tiles are to be shown

Returns:

The updated `MapRasterTileSource` itself (see `getMaxZoomLevel()` and `getMinZoomLevel()` to retrieve the supported zoom level range).

```
public MapRasterTileSource showAtZoomRange (int beginZoomLevel, int endZoomLevel)
```

Shows tiles within a given zoom level range of the Map .

Parameters:

- **beginZoomLevel**

Zoom level representing the beginning of the range within which tiles are to be shown

- **endZoomLevel**

Zoom level representing the end of the range within which tiles are to be shown

Returns:

The updated `MapRasterTileSource` itself (see `getMaxZoomLevel()` and `getMinZoomLevel()` to retrieve the supported zoom level range).

MapTileSystemHelper

The class `MapTileSystemHelper` is a member of `com.here.android.mpa.mapping.MapRasterTileSource`.

Class Summary

```
public static final class MapRasterTileSource.MapTileSystemHelper
```

```
extends java.lang.Object
```

Represents a helper class for converting raster tile coordinates to other tile system values.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 90: Constructors in MapTileSystemHelper

Constructors
<code>MapTileSystemHelper ()</code>

Method Summary

Table 91: Methods in MapTileSystemHelper

Methods
<code>public static String tileXYToQuadKey (int x, int y, int zoomLevel)</code> Converts a raster tile's X-coordinate and Y-coordinate into an equivalent QuadKey at a specified zoom level.

Class Details

Represents a helper class for converting raster tile coordinates to other tile system values.

Constructor Details

`MapTileSystemHelper ()`

Method Details

`public static String tileXYToQuadKey (int x, int y, int zoomLevel)`

Converts a raster tile's X-coordinate and Y-coordinate into an equivalent QuadKey at a specified zoom level.

See also [The Tile Coordinates and Quadkeys](#).

Parameters:

- **x**

Current X-coordinate of the tile

- **y**

Current Y-coordinate of the tile

- **zoomLevel**

Desired zoom level, an `int` within a range from 1 (lowest detail) to 20 (highest detail)

Returns:

The QuadKey

TileResult

The class `TileResult` is a member of `com.here.android.mpa.mapping.MapRasterTileSource`.

Class Summary

public static class `MapRasterTileSource.TileResult`

extends `java.lang.Object`

Result class for getting tile.

[For complete information, see the section [Class Details](#)]

See also:

[getTileWithError\(int, int, int\)](#)

Nested Class Summary

Table 92: Nested Classes in TileResult

Nested Classes

public static final enumeration `MapRasterTileSource.TileResult.Error`

Error code for raster tile result.

Constructor Summary

Table 93: Constructors in TileResult

Constructors

`TileResult (Error error, byte[] data)`

Method Summary

Table 94: Methods in TileResult

Methods

public byte[] `getData ()`

Get the retrieved tile.

public Error `getError ()`

Get the `MapRasterTileSource.TileResult.Error` for get tile operation

Class Details

Result class for getting tile.

See also:

`getTileWithError(int, int, int)`

Constructor Details

`TileResult (Error error, byte[] data)`

Parameters:

- `error`
- `data`

Method Details

`public byte[] getData ()`

Get the retrieved tile.

Returns:

RasterTile

`public Error getError ()`

Get the `MapRasterTileSource.TileResult.Error` for get tile operation

Returns:

Error encountered during get tile operation

Error

The enumeration `Error` is a member of `com.here.android.mpa.mapping.MapRasterTileSource.TileResult`.

Enumeration Summary

`public static final enumeration MapRasterTileSource.TileResult.Error`

`extends java.lang.Enum, java.lang.Object`

Error code for raster tile result.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 95: Enum Constants in Error

Fields
<code>public static final Error NONE</code>
<code>public static final Error NOT_READY</code>

Fields

```
public static final Error NOT_FOUND
```

Method Summary

Table 96: Methods in Error

Methods
<pre>public static Error valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static MapRasterTileSource.TileResult.Error[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Error code for raster tile result.

Enum Constant Details

```
public static final Error NONE
```

```
public static final Error NOT_READY
```

```
public static final Error NOT_FOUND
```

Method Details

```
public static Error valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static MapRasterTileSource.TileResult.Error[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

MapRoute

The class `MapRoute` is a member of `com.here.android.mpa.mapping`.

Class Summary

```
public final class MapRoute  
extends com.here.android.mpa.mapping.MapObject, com.here.android.mpa.common.ViewObject,  
java.lang.Object
```

Represents a `Route` that can be displayed on a `Map`.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 97: Nested Classes in MapRoute

Nested Classes
<pre>public static final enumeration MapRoute.RenderType</pre> <p>Render classification of the route.</p>

Constructor Summary

Table 98: Constructors in MapRoute

Constructors
<code>MapRoute ()</code> Creates a MapRoute object.
<code>MapRoute (Route route)</code> Creates a MapRoute with a specified Route .

Method Summary

Table 99: Methods in MapRoute

Methods
<pre>public boolean equals (Object obj)</pre>
<pre>public int getColor ()</pre> <p>Returns the current ARGB (Alpha/Red/Green/Blue) integer color value used to display this route.</p>
<pre>public RenderType getRenderType ()</pre> <p>Get the RenderType associated with this MapRoute .</p>
<pre>public Route getRoute ()</pre>

Methods

Returns the Route that has been displayed on the Map .

```
public Type getType ()
```

```
public int hashCode ()
```

```
public boolean isManeuverNumberVisible ()
```

Returns a boolean indicating whether maneuver numbers are displayed along with this route.

```
public MapRoute setColor (int argbColor)
```

Sets a color for displaying the route, using an ARGB (Alpha/Red/Green/Blue) integer color value.

```
public MapRoute setManeuverNumberVisible (boolean visible)
```

Sets maneuver numbers to be either displayed along with this route or not displayed.

```
public MapRoute setRenderType (RenderType type)
```

Sets the RenderType associated with this MapRoute .

```
public MapRoute setRoute (Route route)
```

Sets a Route that will be displayed on the Map .

Class Details

Represents a [Route](#) that can be displayed on a [Map](#).

Constructor Details

MapRoute ()

Creates a MapRoute object.

MapRoute (Route route)

Creates a MapRoute with a specified Route .

Typically, a MapRoute is created after a Route has been calculated. An application can pass a calculated Route as a parameter to this method instead of making an explicit call to [setRoute\(Route\)](#). Adding the new MapRoute object to a Map can be done by way of the [addMapObject\(MapObject\)](#) method.

Parameters:

- **route**

A calculated Route used to set to the MapRoute

Method Details

public boolean equals (Object obj)

Parameters:

- **obj**

```
public int getColor ()
```

Returns the current ARGB (Alpha/Red/Green/Blue) integer color value used to display this route.

Returns:

The current ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255], with 0 meaning no contribution for that component and 255 meaning 100% contribution

See also:

[android.graphics.Color](#)

```
public RenderType getRenderType ()
```

Get the RenderType associated with this MapRoute .

Returns:

RenderType

```
public Route getRoute ()
```

Returns the Route that has been displayed on the Map .

Returns:

The Route

```
public Type getType ()
```

```
public int hashCode ()
```

```
public boolean isManeuverNumberVisible ()
```

Returns a boolean indicating whether maneuver numbers are displayed along with this route.

Returns:

True if maneuver numbers are displayed with the route, false otherwise

```
public MapRoute setColor (int argbColor)
```

Sets a color for displaying the route, using an ARGB (Alpha/Red/Green/Blue) integer color value.

Parameters:

- **argbColor**

The ARGB integer color value. The packed integer is made up of 4 bytes: alpha, red, green, blue. Each color component has a value range from [0..255], with 0 meaning no contribution for that component and 255 meaning 100% contribution

Returns:

The updated MapRoute itself.

See also:

[android.graphics.Color](#)

`public MapRoute setManeuverNumberVisible (boolean visible)`

Sets maneuver numbers to be either displayed along with this route or not displayed. By default, maneuver number is invisible.

Parameters:

- **visible**

A boolean specifying whether maneuver numbers are displayed

Returns:

The updated MapRoute itself.

`public MapRoute setRenderType (RenderType type)`

Sets the RenderType associated with this MapRoute . Note changing the color will change the RenderType to custom. Also note, the render type must be set before adding the MapRoute Object to a Map

Parameters:

- **type**

RenderType

Returns:

The updated MapRoute itself.

`public MapRoute setRoute (Route route)`

Sets a Route that will be displayed on the Map .

Parameters:

- **route**

A Route representing the route to be displayed on the Map.

Returns:

The updated MapRoute itself.

RenderType

The enumeration `RenderType` is a member of `com.here.android.mpa.mapping.MapRoute`.

Enumeration Summary

public static final enumeration **MapRoute.RenderType**

extends java.lang.Enum, java.lang.Object

Render classification of the route.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 100: Enum Constants in `RenderType`

Fields
<pre>public static final RenderType PRIMARY</pre> <p>Default primary color of a route.</p>
<pre>public static final RenderType SECONDARY</pre> <p>Secondary color for alternate routes.</p>
<pre>public static final RenderType CUSTOM</pre> <p>Custom color.</p>

Method Summary

Table 101: Methods in `RenderType`

Methods
<pre>public int value ()</pre>
<pre>public static RenderType valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static MapRoute.RenderType[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Render classification of the route. Primary and Secondary routes have pre-defined colors and render widths
Custom routes are routes customized via `MapRoute#setColor(int)`

Enum Constant Details

```
public static final RenderType PRIMARY
```

Default primary color of a route.

```
public static final RenderType SECONDARY
```

Secondary color for alternate routes.

```
public static final RenderType CUSTOM
```

Custom color.

Method Details

```
public int value ()
```

```
public static RenderType valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static MapRoute.RenderType[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

MapState

The class `MapState` is a member of [com.here.android.mpa.mapping](#) .

Class Summary

```
public final class MapState
```

implements android.os.Parcelable

extends java.lang.Object

Represents a composite class comprised of tilt, orientation, zoom level and center point for a [Map](#).

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 102: Constructors in MapState

Constructors
<pre>MapState (float tilt, float orientation, double zoomLevel, GeoCoordinate center)</pre> <p>A constructor that initializes state values for tilt, orientation, zoom level, and map center.</p>

Field Summary

Table 103: Fields in MapState

Fields
<pre>public static final android.os.Parcelable.Creator <MapState> CREATOR</pre>

Method Summary

Table 104: Methods in MapState

Methods
<pre>public int describeContents ()</pre> <p>For documentation, see <i>android.os.Parcelable.describeContents()</i></p>
<pre>public GeoCoordinate getCenter ()</pre> <p>Returns the GeoCoordinate representing the center position.</p>
<pre>public float getOrientation ()</pre> <p>Returns the orientation, in degrees relative to true-north (which is designated as being an orientation of 0 degrees).</p>
<pre>public float getTilt ()</pre> <p>Returns the tilt, in degrees.</p>
<pre>public double getZoomLevel ()</pre> <p>Returns the zoom level.</p>
<pre>public void writeToParcel (Parcel dest, int flags)</pre> <p>For documentation, see <i>android.os.Parcelable.writeToParcel()</i></p>

Class Details

Represents a composite class comprised of tilt, orientation, zoom level and center point for a *Map*.

Constructor Details

```
MapState (float tilt, float orientation, double zoomLevel, GeoCoordinate center)
```

A constructor that initializes state values for tilt, orientation, zoom level, and map center.



Parameters:

- **tilt**
tilt value, in degrees
- **orientation**
orientation value, in degrees, where true-north is 0 degrees
- **zoomLevel**
zoom level value
- **center**
A GeoCoordinate representing the center of the map

See also:

[setZoomLevel\(double\)](#)

Field Details

public static final android.os.Parcelable.Creator <MapState> **CREATOR**

Method Details

public int **describeContents** ()

For documentation, see [android.os.Parcelable.describeContents\(\)](#)

public GeoCoordinate **getCenter** ()

Returns the GeoCoordinate representing the center position.

Returns:

The center position GeoCoordinate

public float **getOrientation** ()

Returns the orientation, in degrees relative to true-north (which is designated as being an orientation of 0 degrees).

Returns:

orientation, in degrees relative to true-north

public float **getTilt** ()

Returns the tilt, in degrees.

Returns:

tilt, in degrees

```
public double getZoomLevel ()
```

Returns the zoom level.

Returns:

zoom level

```
public void writeToParcel (Parcel dest, int flags)
```

For documentation, see *android.os.Parcelable.writeToParcel()*

Parameters:

- **dest**
- **flags**

MapView

The class *MapView* is a member of *com.here.android.mpa.mapping*.

Class Summary

```
public class MapView
```

```
extends java.lang.Object
```

Represents a map view.

[For complete information, see the section [Class Details](#)]

See also:

[MapActivity](#)

[android.view.ViewGroup](#)

Nested Class Summary

Table 105: Nested Classes in *MapView*

Nested Classes
<pre>public static final enumeration MapView.TileSize Tile resolution selection.</pre>

Constructor Summary

Table 106: Constructors in MapView

Constructors
<code>MapView (Context context)</code> Constructor that initializes the context.
<code>MapView (Context context, AttributeSet attrs)</code> Constructor that initializes the context and a set of attributes.

Field Summary

Table 107: Fields in MapView

Fields
<code>public static final int FIXED_HIGHLDPPI_SIZE</code>
<code>public static final int FIXED_LOWDPI_SIZE</code>
<code>protected boolean m_copyrightLogoVisible</code>
<code>protected ImageView m_logoView</code>

Method Summary

Table 108: Methods in MapView

Methods
<code>public void addOnMapRenderListener (OnMapRenderListener listener)</code> Adds a <i>OnMapRenderListener</i> to listen for map render events.
<code>protected void dispatchRestoreInstanceState (SparseArray container)</code> Override to prevent thawing of any child views.
<code>protected void dispatchSaveInstanceState (SparseArray container)</code> Override to prevent freezing of any child views.
<code>public Rect getCopyrightBoundaryRect ()</code> Gets the current rectangle relative to the view group as a container for the HERE copyright logo.
<code>public int getCopyrightLogoHeight ()</code> Gets the height of the copyright logo.
<code>public CopyrightLogoPosition getCopyrightLogoPosition ()</code> Gets the current position for the HERE copyright logo.
<code>public int getCopyrightLogoVisibility ()</code> Gets the visibility of the HERE copyright logo.
<code>public int getCopyrightLogoWidth ()</code>



Methods

Gets the width of the copyright logo.

```
public int getCopyrightMargin ()
```

Gets the current margin, in pixels, for the HERE copyright logo, an offset from the edge of the visible map area to the edge of the logo.

```
public Map getMap ()
```

Returns the instance of *Map* associated with this *MapView*

```
public MapGesture getMapGesture ()
```

Gets the *MapGesture* representing the current gesture handler for the *MapView*.

```
protected void onLayout (boolean changed, int left, int top, int right, int bottom)
```

For documentation, see *android.view.ViewGroup*

```
public void onPause ()
```

Propagates an activity's *onPause* () event to the view.

```
public void onRestoreInstanceState (Parcelable state)
```

Callback indicating that a stored view state was restored (e.g.

```
public void onResume ()
```

Propagates an activity's *onResume* () event to the view.

```
public Parcelable onSaveInstanceState ()
```

Callback indicating that the internal state of a view was saved for later use (e.g.

```
public void removeOnMapRenderListener (OnMapRenderListener listener)
```

Removes an existing *OnMapRenderListener*.

```
public void setCopyrightBoundaryRect (Rect rect)
```

Sets a rectangle relative to the view group as a container for the HERE copyright logo.

```
public void setCopyrightLogoPosition (CopyrightLogoPosition position)
```

Sets a position for the HERE copyright logo.

```
public void setCopyrightMargin (int margin)
```

Sets a margin, in pixels, for the HERE copyright logo, an offset from the edge of the visible map area to the edge of the logo (depending on the placement).

```
public void setMap (Map aMap)
```

Associates the graphical view element with a *Map*.

```
public void setMapMarkerDragListener (OnDragListener listener)
```

Sets a *MapMarker.OnDragListener* to be invoked whenever any *MapMarker* added onto a *Map* that is attached to this *MapView* is dragged.

```
public static void setTileResolution (TileSize size)
```

Changes the tiles source to use.

Class Details

Represents a map view. This is the "View" UI class designed to handle all UI-related use cases, including rendering and screen touch events.

Each `MapView` must be bound to a [Map](#), and map-related objects should be persisted during application runtime. `MapView` objects live and expire according to the associated activity's lifecycle.

A `MapView` is defined in an Android layout XML file. For example:

```
<com.here.android.mpa.mapping.MapView  
    android:id="@+id/mapview"  
    android:layout_width="fill_parent"  
    android:layout_height="fill_parent"  
    android:visibility="visible"/>
```

Each `MapView` should follow the regular android lifecycle. When an activity's `onResume()` and `onPause()` are called, the view should also be notified via calls from within those methods. Please take care in how much processing is done in the `onResume()` method of an activity. Performing significant amounts of processing may delay the view rendering in cases such as device orientation change. It is recommended to use a specifically designated handler for organizing the amount of processing to be done in such cases.

Note that `MapView` does not notify the `MapEngine` when it is paused or resumed. User of `MapView` is responsible for handling the pausing and resuming of the `MapEngine` if needed. Another option is to utilize the `MapActivity` class when creating an activity with a `MapView`.

Although this class inherits from `ViewGroup`, it is not advisable for users to add children to `MapView` as no layout actions will be performed on any added children views.

See also:

[MapActivity](#)

[android.view.ViewGroup](#)

Constructor Details

`MapView (Context context)`

Constructor that initializes the context.

Parameters:

- **context**

Context of the `MapView`

See also:

[MapView\(Context, AttributeSet\)](#)

[android.content.Context](#)

`MapView (Context context, AttributeSet attrs)`



Constructor that initializes the context and a set of attributes.

Parameters:

- **context**
Context of the MapView
- **attrs**
An AttributeSet representing attributes of the MapView

See also:

[MapView\(Context\)](#)

[android.content.Context](#)

[android.util.AttributeSet](#)

Field Details

public static final int **FIXED_HIGHDPI_SIZE**

public static final int **FIXED_LOWDPI_SIZE**

protected boolean **m_copyrightLogoVisible**

protected ImageView **m_logoView**

Method Details

public void **addOnMapRenderListener** ([OnMapRenderListener](#) listener)

Adds a [OnMapRenderListener](#) to listen for map render events.

Parameters:

- **listener**
A [OnMapRenderListener](#) to add to the MapView

See also:

[removeOnMapRenderListener\(OnMapRenderListener\)](#)

protected void **dispatchRestoreInstanceState** ([SparseArray](#) container)

Override to prevent thawing of any child views. As child views created and added to the view group dynamically have the same id as the parent, causing conflict when the state is saved, all child views are blocked from being saved. Instead, this container will manually trigger the save and restore.

Parameters:

- **container**

```
protected void dispatchSaveInstanceState (SparseArray container)
```

Override to prevent freezing of any child views. As child views created and added to the view group dynamically have the same id as the parent, causing conflict when the state is saved, all child views are blocked from being saved. Instead, this container will manually trigger the save and restore.

Parameters:

- **container**

```
public Rect getCopyrightBoundaryRect ()
```

Gets the current rectangle relative to the view group as a container for the HERE copyright logo.

Returns:

The boundary rect (can be null).

```
public int getCopyrightLogoHeight ()
```

Gets the height of the copyright logo.

This method only returns a valid value once a [Map](#) has been set to this view.

Returns:

The height of the copyright logo in pixels. Returns -1 if unavailable.

```
public CopyrightLogoPosition getCopyrightLogoPosition ()
```

Gets the current position for the HERE copyright logo.

Returns:

The position of the logo.

```
public int getCopyrightLogoVisibility ()
```

Gets the visibility of the HERE copyright logo. Copyright logo is defaulted to be visible. Once changed, the visibility of logo stays effective even when the screen is rotated or re-created.

Returns:

One of the two values `View.VISIBLE` or `View.INVISIBLE` to represent the copyright logo's visibility.



```
public int getCopyrightLogoWidth ()
```

Gets the width of the copyright logo.

This method only returns a valid value once a [Map](#) has been set to this view.

Returns:

The width of the copyright logo in pixels. Returns -1 if unavailable.

```
public int getCopyrightMargin ()
```

Gets the current margin, in pixels, for the HERE copyright logo, an offset from the edge of the visible map area to the edge of the logo.

Returns:

The current offset from the edge of the [MapView](#)

```
public Map getMap ()
```

Returns the instance of [Map](#) associated with this [MapView](#)

Returns:

The [Map](#) object currently displayed in this view.

```
public MapGesture getMapGesture ()
```

Gets the [MapGesture](#) representing the current gesture handler for the [MapView](#). Applications can intercept this object and override the default events.

Returns:

The [MapGesture](#)

```
protected void onLayout (boolean changed, int left, int top, int right, int bottom)
```

For documentation, see [android.view.ViewGroup](#)

Parameters:

- **changed**
- **left**
- **top**
- **right**
- **bottom**

```
public void onPause ()
```

Propagates an activity's `onPause()` event to the view. Applications can call this method within the `onPause()` method of any activity which has a `MapView` as part of its view hierarchy. Note that unlike `MapFragment`, `MapView` does not automatically handle the pausing and/or resuming of `MapEngine`. Owner of `MapView` is responsible to address the handling of `onPause()` if needed.

See also:

[onPause\(\)](#)

[onPause\(\)](#)

```
public void onRestoreInstanceState (Parcelable state)
```

Callback indicating that a stored view state was restored (e.g. to create a new `MapView` with the same state).

Parameters:

- **state**

An `android.os.Parcelable` in which the view state was stored

See also:

[android.view.View.onRestoreInstanceState\(Parcelable\)](#)

```
public void onResume ()
```

Propagates an activity's `onResume()` event to the view. Applications can call this method within the `onResume()` method of any activity which has a `MapView` as part of its view hierarchy. Note that unlike `MapFragment`, `MapView` does not automatically handle the pausing and/or resuming of `MapEngine`. Owner of `MapView` is responsible to address the handling of `onResume()` if needed.

See also:

[onResume\(\)](#)

[onResume\(\)](#)

```
public Parcelable onSaveInstanceState ()
```

Callback indicating that the internal state of a view was saved for later use (e.g. to create a new `MapView` with the same state).

Returns:

The `android.os.Parcelable` for storing the view state

See also:

[android.view.View.onSaveInstanceState\(\)](#)

```
public void removeOnMapRenderListener (OnMapRenderListener listener)
```

Removes an existing *OnMapRenderListener*.

Parameters:

- **listener**

A *OnMapRenderListener* to remove from the *MapView*

```
public void setCopyrightBoundaryRect (Rect rect)
```

Sets a rectangle relative to the view group as a container for the HERE copyright logo.

If the specified rectangle is not contained completely within the current visible map area, their area of intersection will be used instead of the specified rectangle's area. If the specified rectangle is outside the current visible map area, it will be ignored.

Note: the copyright boundary rectangle is reset upon screen rotation or upon recreating the screen.

Parameters:

- **rect**

The rectangle to move the copyright logo to.

```
public void setCopyrightLogoPosition (CopyrightLogoPosition position)
```

Sets a position for the HERE copyright logo. The current default is to place the logo at the center-bottom of the visible map view area.

Note: after the logo's position is set, it stays effective even when the screen is rotated or re-created.

Parameters:

- **position**

A *MapCopyrightLogoPosition* value representing the desired placement of the HERE copyright logo with respect to the visible map view area

```
public void setCopyrightMargin (int margin)
```

Sets a margin, in pixels, for the HERE copyright logo, an offset from the edge of the visible map area to the edge of the logo (depending on the placement).

Parameters:

- **margin**

Desired offset from the edge of the *MapView*

```
public void setMap (Map aMap)
```

Associates the graphical view element with a `Map`. Applications must call this method to bind the `MapView` and `Map`.

Note: the `Map` that gets passed as a parameter to this method could be `null`, in which case all listeners will be cleaned up.

Users are advised to call `setMap(Map)` with `null` to detach the map only after the `onPause()` is called to avoid memory leaks.

Parameters:

- `aMap`

A `Map` to associate with the `MapView` (could be `null`)

```
public void setMapMarkerDragListener (OnDragListener listener)
```

Sets a `MapMarker.OnDragListener` to be invoked whenever any `MapMarker` added onto a `Map` that is attached to this `MapView` is dragged.

Parameters:

- `listener`

An `MapMarker.OnDragListener` to set for this `MapView`

```
public static void setTileResolution (TileSize size)
```

Changes the tiles source to use. This must be done before the map view is initialized.

Parameters:

- `size`

Tile size selection

TileSize

The enumeration `TileSize` is a member of `com.here.android.mpa.mapping.MapView`.

Enumeration Summary

```
public static final enumeration MapView.TileSize
```

extends java.lang.Enum, java.lang.Object

Tile resolution selection.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 109: Enum Constants in TileSize

Fields
<pre>public static final TileSize LOW_DPI_256_TILE</pre> <p>Low resolution tiles, 256x256 px</p>
<pre>public static final TileSize HIGH_DPI_512_TILE</pre> <p>High resolution tiles, 512x512 px</p>

Method Summary

Table 110: Methods in TileSize

Methods
<pre>public static TileSize valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static MapView.TileSize[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Tile resolution selection.

Enum Constant Details

```
public static final TileSize LOW_DPI_256_TILE
```

Low resolution tiles, 256x256 px

```
public static final TileSize HIGH_DPI_512_TILE
```

High resolution tiles, 512x512 px

Method Details

```
public static TileSize valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static MapView.TileSize[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

OnMapRenderListener

The interface *OnMapRenderListener* is a member of [com.here.android.mpa.mapping](#).

Interface Summary

public abstract interface **OnMapRenderListener**

Represents an abstract class listener to provide notification upon completion of a *Map* rendering event.

[For complete information, see the section [Interface Details](#)]

See also:

[addOnMapRenderListener\(OnMapRenderListener\)](#)

[removeOnMapRenderListener\(OnMapRenderListener\)](#)

[addOnMapRenderListener\(OnMapRenderListener\)](#)

[removeOnMapRenderListener\(OnMapRenderListener\)](#)

Nested Class Summary

Table 111: Nested Classes in *OnMapRenderListener*

Nested Classes
<pre>public static abstract class OnMapRenderListener.OnMapRenderListenerAdapter</pre> <p>Default implementation for the OnMapRenderListener interface.</p>

Method Summary

Table 112: Methods in *OnMapRenderListener*

Methods
<pre>public abstract void onGraphicsDetached ()</pre> <p>Callback indicating that the map renderer has been cleanly detached from the view.</p>
<pre>public abstract void onPostDraw (boolean invalidated, long renderTime)</pre> <p>Callback indicating that a <i>Map</i> drawing event has ended.</p>
<pre>public abstract void onPreDraw ()</pre> <p>Callback indicating that a <i>Map</i> drawing event is about to occur.</p>
<pre>public abstract void onRenderBufferCreated ()</pre> <p>Callback indicating that the map render buffer has been created.</p>

Methods

```
public abstract void onSizeChanged (int width, int height)
```

Callback indicating that a *Map* size has changed following a rotation.

Interface Details

Represents an abstract class listener to provide notification upon completion of a *Map* rendering event.

See also:

[addOnMapRenderListener\(OnMapRenderListener\)](#)

[removeOnMapRenderListener\(OnMapRenderListener\)](#)

[addOnMapRenderListener\(OnMapRenderListener\)](#)

[removeOnMapRenderListener\(OnMapRenderListener\)](#)

Method Details

```
public abstract void onGraphicsDetached ()
```

Callback indicating that the map renderer has been cleanly detached from the view.

```
public abstract void onPostDraw (boolean invalidated, long renderTime)
```

Callback indicating that a *Map* drawing event has ended. Applications can perform custom rendering when this callback is sent.

Note: This callback is made on the rendering thread.

Parameters:

- **invalidated**

A boolean specifying whether the map is invalidated and will redraw

- **renderTime**

The time taken to render the map

```
public abstract void onPreDraw ()
```

Callback indicating that a *Map* drawing event is about to occur. Applications can perform custom rendering when this callback is sent.

This callback is preferred to [onPostDraw\(boolean, long\)](#) when making changes to *MapObjects* as the changes can be made during the upcoming draw and another *Map* invalidation will not need to take place.

Note: This callback is made on the rendering thread.

```
public abstract void onRenderBufferCreated ()
```

Callback indicating that the map render buffer has been created.

Note: This callback is made on the rendering thread.

```
public abstract void onSizeChanged (int width, int height)
```

Callback indicating that a *Map* size has changed following a rotation. Applications can perform custom rendering when this callback is sent.

Note: This callback is made on the UI thread.

Parameters:

- **width**
A post-rotation width
- **height**
A post-rotation height

OnMapRenderListenerAdapter

The class *OnMapRenderListenerAdapter* is a member of *com.here.android.mpa.mapping.OnMapRenderListener*.

Class Summary

```
public static abstract class OnMapRenderListener.OnMapRenderListenerAdapter
```

```
    implements com.here.android.mpa.mapping.OnMapRenderListener
```

```
    extends java.lang.Object
```

Default implementation for the *OnMapRenderListener* interface.

[For complete information, see the section [Class Details](#)]

See also:

[OnMapRenderListener](#)

Constructor Summary

Table 113: Constructors in *OnMapRenderListenerAdapter*

Constructors
<code>OnMapRenderListenerAdapter ()</code>

Method Summary

Table 114: Methods in `OnMapRenderListenerAdapter`

Methods
<code>public void onGraphicsDetached ()</code>
<code>public void onPostDraw (boolean invalidated, long renderTime)</code>
<code>public void onPreDraw ()</code>
<code>public void onRenderBufferCreated ()</code>
<code>public void onSizeChanged (int width, int height)</code>

Class Details

Default implementation for the `OnMapRenderListener` interface. Users may use this abstract class and overload specific methods to have a smaller code footprint.

See also:

[OnMapRenderListener](#)

Constructor Details

`OnMapRenderListenerAdapter ()`

Method Details

`public void onGraphicsDetached ()`

`public void onPostDraw (boolean invalidated, long renderTime)`

Parameters:

- `invalidated`
- `renderTime`

`public void onPreDraw ()`

`public void onRenderBufferCreated ()`

`public void onSizeChanged (int width, int height)`

Parameters:

- **width**
- **height**

PositionIndicator

The class *PositionIndicator* is a member of [com.here.android.mpa.mapping](#).

Class Summary

public final class **PositionIndicator**

extends java.lang.Object

Represents a class for rendering a map marker to indicate the current position.

[For complete information, see the section [Class Details](#)]

See also:

[PositioningManager](#)

Method Summary

Table 115: Methods in PositionIndicator

Methods
<pre>public Image getMarker ()</pre> <p>Gets the current marker image.</p>
<pre>public int getZIndex ()</pre> <p>Get the Z index of the position indicator.</p>
<pre>public boolean isAccuracyIndicatorVisible ()</pre> <p>Gets the current visibility state of the GPS accuracy indicator.</p>
<pre>public boolean isVisible ()</pre> <p>Gets the boolean indicating whether the PositionIndicator instance is visible.</p>
<pre>public PositionIndicator setAccuracyIndicatorVisible (boolean visible)</pre> <p>Sets a GPS accuracy indicator for the PositionIndicator to be either visible or hidden.</p>
<pre>public PositionIndicator setMarker (Image marker)</pre> <p>Sets a marker image, overriding the default marker image.</p>
<pre>public PositionIndicator setVisible (boolean visible)</pre> <p>Sets a PositionIndicator to be either visible or hidden.</p>
<pre>public PositionIndicator setZIndex (int index)</pre> <p>Set the Z index of the position indicator.</p>

Class Details

Represents a class for rendering a map marker to indicate the current position. The marker is surrounded by a circle, the diameter of which illustrates the accuracy of the marked position.

See also:

[PositioningManager](#)

Method Details

```
public Image getMarker ()
```

Gets the current marker image.

Returns:

The marker Image used to display the current position on a map

```
public int getZIndex ()
```

Get the Z index of the position indicator.

Returns:

int current z index.

```
public boolean isAccuracyIndicatorVisible ()
```

Gets the current visibility state of the GPS accuracy indicator.

Returns:

True if the GPS accuracy indicator is visible, false otherwise

```
public boolean isVisible ()
```

Gets the boolean indicating whether the PositionIndicator instance is visible.

Returns:

True if the PositionIndicator is visible, false otherwise

```
public PositionIndicator setAccuracyIndicatorVisible (boolean visible)
```

Sets a GPS accuracy indicator for the PositionIndicator to be either visible or hidden. Accuracy is represented by a circle surrounding the marked position, with a smaller diameter representing higher accuracy. The default is the GPS accuracy is visible.

Note: if the PositionIndicator is hidden, the GPS accuracy indicator will be hidden as well.

Parameters:

- **visible**

A boolean specifying whether the accuracy indicator should be visible

Returns:

PositionIndicator this object for method chaining.

See also:

[setVisible\(boolean\)](#)

```
public PositionIndicator setMarker (Image marker)
```

Sets a marker image, overriding the default marker image.

Parameters:

- **marker**

An Image representing the marker used to display the current position on a map

Returns:

PositionIndicator this object for method chaining.

```
public PositionIndicator setVisible (boolean visible)
```

Sets a PositionIndicator to be either visible or hidden. By default, the position indicator is invisible.

Parameters:

- **visible**

A boolean specifying PositionIndicator visibility

Returns:

PositionIndicator this object for method chaining.

```
public PositionIndicator setZIndex (int index)
```

Set the Z index of the position indicator. The default Z-Index is currently the max value supported.

Parameters:

- **index**

A new z-index value for the MapObject, a 16-bit int within the range of [0..65535]

Returns:

PositionIndicator this object for method chaining.

See also:

[setZIndex\(int\)](#)

UrlMapRasterTileSourceBase

The class `UrlMapRasterTileSourceBase` is a member of `com.here.android.mpa.mapping`.

Class Summary

```
public abstract class UrlMapRasterTileSourceBase  
extends com.here.android.mpa.mapping.MapRasterTileSource, java.lang.Object
```

Represents an abstract base class for URL map raster tile sources.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 116: Constructors in `UrlMapRasterTileSourceBase`

Constructors
<code>UrlMapRasterTileSourceBase ()</code>

Method Summary

Table 117: Methods in `UrlMapRasterTileSourceBase`

Methods
<code>public TileResult getTileWithError (int x, int y, int zoomLevel)</code> UrlMapRasterTileSourceBase will only retrieve tile data using the source URL.
<code>public abstract String getUrl (int x, int y, int zoomLevel)</code> Gets the URL representing the source of the specified raster tile image.
<code>public boolean hasTile (int x, int y, int zoomLevel)</code> UrlMapRasterTileSourceBase will only retrieve tile data using the source URL.

Class Details

Represents an abstract base class for URL map raster tile sources. Extend this class and implement the `getUrl(int, int, int)` method to create custom URL raster tile sources.

Constructor Details

`UrlMapRasterTileSourceBase ()`

Method Details

`public TileResult getTileWithError (int x, int y, int zoomLevel)`

`UrlMapRasterTileSourceBase` will only retrieve tile data using the source URL. A `TileResult.getData()` always returns `null` and `TileResult.getError()` always returns `NONE`.

Parameters:

- **x**
X coordinate
- **y**
Y coordinate
- **zoomLevel**
zoom level

Returns:

A `TileResult` representing tile data and operation error. Check `TileResult#getError()` to check for error. Check `TileResult#getData()` to get `RasterTile`

```
public abstract String getUrl (int x, int y, int zoomLevel)
```

Gets the URL representing the source of the specified raster tile image.

Note: implementations of raster tile sources must override this method to provide a complete URL string pointing to the raster tile image.

Parameters:

- **x**
A current raster tile's X-coordinate
- **y**
A current raster tile's Y-coordinate
- **zoomLevel**
A current raster tile's zoom level

Returns:

The URL source for the raster tile image. Return `null` if an URL cannot be created.

```
public boolean hasTile (int x, int y, int zoomLevel)
```

`UrlMapRasterTileSourceBase` will only retrieve tile data using the source URL. So `hasTile` always returned `false`.

Parameters:

- **x**
X coordinate
- **y**
Y coordinate
- **zoomLevel**

zoom level

Returns:

true if the tile exists, false otherwise

routing

The package *routing* is a member of *com.here.android.mpa*.

Package Summary

routing

This package provides classes, interfaces, and enumerations for route calculation and route description (directions).

Package Details

This package provides classes, interfaces, and enumerations for route calculation and route description (directions).

To use the HERE Routing feature, your application must include the google-gson library (release 2.2.4 or a compatible version) on its class path. This library can be downloaded from the google-gson project website at <https://github.com/google/gson>. Attempting to use the Routing feature without adding this library causes runtime errors

Note: the *RouteManager* class provides access to the route calculation and positioning functionality.

To calculate a route, you need:

- A parameter list containing at least two waypoints for the start and end of the route - this is an instance of *RoutePlan*
- A set of routing options to control route calculation features - this is an instance of *RouteOptions*
- An event listener for listening to RouteManager events - this is an instance of *Listener*

For more information on how to use the *RouteManager*, see the "Directions" section in the HERE SDK for Android Developer's Guide

Maneuver

The class *Maneuver* is a member of *com.here.android.mpa.routing*.

Class Summary

public final class **Maneuver**

extends java.lang.Object

Represents the action required to leave one street segment and enter the next in the chain of directions that comprises a calculated *Route*.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 118: Nested Classes in Maneuver

Nested Classes
<pre>public static final enumeration Maneuver.Action</pre> <p>Represents values describing the possible actions of a <i>Maneuver</i>.</p>
<pre>public static final enumeration Maneuver.Icon</pre> <p>Represents values describing types of <i>Maneuver</i> icons.</p>
<pre>public static final enumeration Maneuver.TrafficDirection</pre> <p>Represents values describing possible traffic directions, the side of road on which one must drive.</p>
<pre>public static final enumeration Maneuver.Turn</pre> <p>Represents values describing possible turns within a <i>Maneuver</i>.</p>

Method Summary

Table 119: Methods in Maneuver

Methods
<pre>public Action getAction ()</pre> <p>Gets the <i>Maneuver.Action</i> required to complete the maneuver.</p>
<pre>public int getAngle ()</pre> <p>The angle of the maneuver.</p>
<pre>public GeoBoundingBox getBoundingBox ()</pre> <p>Gets the <i>GeoBoundingBox</i> of the maneuver, which is a group of GeoCoordinates forming a polygon</p>
<pre>public GeoCoordinate getCoordinate ()</pre> <p>Gets the <i>GeoCoordinate</i> of the maneuver.</p>
<pre>public int getDistanceFromPreviousManeuver ()</pre> <p>Gets the distance from the previous maneuver to the current maneuver, in meters.</p>
<pre>public int getDistanceFromStart ()</pre> <p>Gets the distance from the start of the route to the maneuver, in meters.</p>
<pre>public int getDistanceToNextManeuver ()</pre> <p>Gets the distance to the next maneuver from the current maneuver, in meters.</p>
<pre>public Icon getIcon ()</pre> <p>Gets the <i>Maneuver.Icon</i> for the maneuver.</p>

Methods

```
public String getInstruction ()
```

Deprecated: See [getAction\(\)](#) [getTurn\(\)](#) [getRoadName\(\)](#), [getRoadNumber\(\)](#) [getNextRoadName\(\)](#), [getNextRoadNumber\(\)](#)

The textual instruction describing the maneuver.

```
public java.util.List <GeoCoordinate> getManeuverGeometry ()
```

Puts all points of the maneuvers polyline in the right order into the given collection.

```
public int getMapOrientation ()
```

Gets the map orientation at the start of the maneuver, in degrees.

```
public String getNextRoadName ()
```

Gets the name of the road to which the maneuver leads.

```
public String getNextRoadNumber ()
```

Gets the road number to which the maneuver leads.

```
public java.util.List <RoadElement> getRoadElements ()
```

Returns a list of [RoadElements](#) within the maneuver.

```
public String getRoadName ()
```

Gets the name of the road on which the maneuver takes place.

```
public String getRoadNumber ()
```

Gets the road number on which the maneuver takes place, a short label for the road or highway (e.g.

```
public java.util.List <RouteElement> getRouteElements ()
```

Returns a list of [RouteElement](#) within the maneuver

```
public Signpost getSignpost ()
```

Gets the signpost for this maneuver.

```
public Date getStartTime ()
```

Gets the (estimated) time at which the maneuver starts.

```
public TrafficDirection getTrafficDirection ()
```

Return traffic direction.

```
public TransportMode getTransportMode ()
```

Gets the [RouteOptions.TransportMode](#) used for the maneuver.

```
public Turn getTurn ()
```

Gets the [Maneuver.Turn](#) required to complete the maneuver.

Class Details

Represents the action required to leave one street segment and enter the next in the chain of directions that comprises a calculated [Route](#).

Method Details

```
public Action getAction ()
```

Gets the *Maneuver.Action* required to complete the maneuver.

Returns:

The *Maneuver.Action*

```
public int getAngle ()
```

The angle of the maneuver.

Returns:

The angle in degrees from end of the start road to the start of the end road. Angle has a value from 0, 360, north is up, clockwise

```
public GeoBoundingBox getBoundingBox ()
```

Gets the *GeoBoundingBox* of the maneuver, which is a group of GeoCoordinates forming a polygon

Returns:

The *GeoBoundingBox*

```
public GeoCoordinate getCoordinate ()
```

Gets the *GeoCoordinate* of the maneuver.

Returns:

The *GeoCoordinate*

```
public int getDistanceFromPreviousManeuver ()
```

Gets the distance from the previous maneuver to the current maneuver, in meters.

Returns:

The distance

```
public int getDistanceFromStart ()
```

Gets the distance from the start of the route to the maneuver, in meters.

Returns:

The distance

```
public int getDistanceToNextManeuver ()
```

Gets the distance to the next maneuver from the current maneuver, in meters.

Returns:

The distance

```
public Icon getIcon ()
```

Gets the *Maneuver.Icon* for the maneuver.

Returns:

The *Maneuver.Icon*

```
public String getInstruction ()
```

Deprecated: See [getAction\(\)](#) [getTurn\(\)](#) [getRoadName\(\)](#), [getRoadNumber\(\)](#) [getNextRoadName\(\)](#), [getNextRoadNumber\(\)](#)

The textual instruction describing the maneuver.

Returns:

the instruction

```
public java.util.List <GeoCoordinate> getManeuverGeometry ()
```

Puts all points of the maneuvers polyline in the right order into the given collection.

Returns:

a collection of *GeoCoordinates*.

```
public int getMapOrientation ()
```

Gets the map orientation at the start of the maneuver, in degrees.

Note: a returned value of zero represents true-north, with increasing values representing a clockwise progression of map orientation.

Returns:

The orientation

```
public String getNextRoadName ()
```

Gets the name of the road to which the maneuver leads.

Next road name is provided if available for a given *Maneuver*. If not provided, it should be left blank. It's erroneous to assume that it is the same as prior maneuvers.

Returns:



The next road name

```
public String getNextRoadNumber ()
```

Gets the road number to which the maneuver leads.

Returns:

The road number of the next road element

```
public java.util.List <RoadElement> getRoadElements ()
```

Returns a list of *RoadElements* within the maneuver.

Returns:

a collection of *RoadElements*.

```
public String getRoadName ()
```

Gets the name of the road on which the maneuver takes place.

Road name is provided if available for a given Maneuver . If not provided, it should be left blank. It's erroneous to assume that it is the same as prior maneuvers.

Returns:

The road name

```
public String getRoadNumber ()
```

Gets the road number on which the maneuver takes place, a short label for the road or highway (e.g. 5 for Interstate 5).

If the road number is unknown, this method will return an empty string.

Returns:

The road number

```
public java.util.List <RouteElement> getRouteElements ()
```

Returns a list of *RouteElement* within the maneuver

Returns:

a collection of *RouteElement*.

```
public Signpost getSignpost ()
```

Gets the the signpost for this maneuver. If the signpost is not valid, a NULL is returned.

Returns:

Signpost if a valid signpost exists. NULL Otherwise.

```
public Date getStartTime ()
```

Gets the (estimated) time at which the maneuver starts.

If no departure time was set for the [RouteOptions](#) associated with the maneuver, then the time is relative to the system time when the route calculation took place. Otherwise, the times are relative to the specified departure time.

Returns:

The start time, or null if not available

See also:

[setTime\(Date, TimeType\)](#)

```
public TrafficDirection getTrafficDirection ()
```

Return traffic direction.

Returns:

LEFT, if left side traffic, RIGHT if right side traffic.

```
public TransportMode getTransportMode ()
```

Gets the [RouteOptions.TransportMode](#) used for the maneuver. This might differ from the [RouteOptions.TransportMode](#) used when calculating the [Route](#) with which the particular maneuver is associated.

Returns:

The [RouteOptions.TransportMode](#)

```
public Turn getTurn ()
```

Gets the [Maneuver.Turn](#) required to complete the maneuver.

Returns:

The [Maneuver.Turn](#)

Action

The enumeration Action is a member of [com.here.android.mpa.routing.Maneuver](#).

Enumeration Summary

public static final enumeration **Maneuver.Action**

extends java.lang.Enum, java.lang.Object

Represents values describing the possible actions of a *Maneuver*.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 120: Enum Constants in Action

Fields
<pre>public static final Action UNDEFINED</pre> <p>An undefined action (the default), avoided for real maneuvers.</p>
<pre>public static final Action NO_ACTION</pre> <p>An indication that there is no action associated with the maneuver.</p>
<pre>public static final Action END</pre> <p>An action that indicates the end of a route.</p>
<pre>public static final Action STOPOVER</pre> <p>An action that indicates a stopover.</p>
<pre>public static final Action JUNCTION</pre> <p>An action that indicates a junction.</p>
<pre>public static final Action ROUNDABOUT</pre> <p>An action that indicates a roundabout.</p>
<pre>public static final Action UTURN</pre> <p>An action that indicates a u-turn.</p>
<pre>public static final Action ENTER_HIGHWAY_FROM_RIGHT</pre> <p>An action that indicates entering a highway from the right.</p>
<pre>public static final Action ENTER_HIGHWAY_FROM_LEFT</pre> <p>An action that indicates entering a highway from the left.</p>
<pre>public static final Action ENTER_HIGHWAY</pre> <p>An action that indicates entering a highway.</p>
<pre>public static final Action LEAVE_HIGHWAY</pre> <p>An action that indicates leaving a highway.</p>
<pre>public static final Action CHANGE_HIGHWAY</pre> <p>An action that indicates changing from one highway to another.</p>
<pre>public static final Action CONTINUE_HIGHWAY</pre> <p>An action that indicates continuing along a highway.</p>

Fields

```
public static final Action FERRY
```

An action that indicates boarding a ferry.

```
public static final Action PASS_JUNCTION
```

An action that indicates passing a junction.

```
public static final Action INVALID
```

An invalid action.

Method Summary

Table 121: Methods in Action

Methods

```
public static Action valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static Maneuver.Action[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values describing the possible actions of a *Maneuver*.

Enum Constant Details

```
public static final Action UNDEFINED
```

An undefined action (the default), avoided for real maneuvers.

```
public static final Action NO_ACTION
```

An indication that there is no action associated with the maneuver.

```
public static final Action END
```

An action that indicates the end of a route.

```
public static final Action STOPOVER
```

An action that indicates a stopover.

```
public static final Action JUNCTION
```

An action that indicates a junction.

```
public static final Action ROUNDABOUT
```

An action that indicates a roundabout.

```
public static final Action UTURN
```

An action that indicates a u-turn.

```
public static final Action ENTER_HIGHWAY_FROM_RIGHT
```

An action that indicates entering a highway from the right.

```
public static final Action ENTER_HIGHWAY_FROM_LEFT
```

An action that indicates entering a highway from the left.

```
public static final Action ENTER_HIGHWAY
```

An action that indicates entering a highway.

```
public static final Action LEAVE_HIGHWAY
```

An action that indicates leaving a highway.

```
public static final Action CHANGE_HIGHWAY
```

An action that indicates changing from one highway to another.

```
public static final Action CONTINUE_HIGHWAY
```

An action that indicates continuing along a highway.

```
public static final Action FERRY
```

An action that indicates boarding a ferry.

```
public static final Action PASS_JUNCTION
```

An action that indicates passing a junction.

```
public static final Action INVALID
```

An invalid action.

Method Details

```
public static Action valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Maneuver.Action[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Icon

The enumeration *Icon* is a member of *com.here.android.mpa.routing.Maneuver*.

Enumeration Summary

```
public static final enumeration Maneuver.Icon
```

```
extends java.lang.Enum, java.lang.Object
```

Represents values describing types of *Maneuver* icons.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 122: Enum Constants in Icon

Fields
<pre>public static final Icon UNDEFINED</pre> <p>An undefined icon.</p>
<pre>public static final Icon GO_STRAIGHT</pre> <p>An icon that indicates a straight course.</p>
<pre>public static final Icon UTURN_RIGHT</pre> <p>An icon that indicates a right u-turn.</p>
<pre>public static final Icon UTURN_LEFT</pre>

Fields

An icon that indicates a left u-turn.

```
public static final Icon KEEP_RIGHT
```

An icon that indicates keeping to the right.

```
public static final Icon LIGHT_RIGHT
```

An icon that indicates a light right turn.

```
public static final Icon QUITE_RIGHT
```

An icon that indicates a normal right turn.

```
public static final Icon HEAVY_RIGHT
```

An icon that indicates a heavy right turn.

```
public static final Icon KEEP_MIDDLE
```

Keep middle line.

```
public static final Icon KEEP_LEFT
```

An icon that indicates keeping to the left.

```
public static final Icon LIGHT_LEFT
```

An icon that indicates a light left turn.

```
public static final Icon QUITE_LEFT
```

An icon that indicates a normal left turn.

```
public static final Icon HEAVY_LEFT
```

An icon that indicates a heavy left turn.

```
public static final Icon ENTER_HIGHWAY_RIGHT_LANE
```

An icon that indicates entering a highway into the right lane.

```
public static final Icon ENTER_HIGHWAY_LEFT_LANE
```

An icon that indicates entering a highway into the left lane.

```
public static final Icon LEAVE_HIGHWAY_RIGHT_LANE
```

An icon that indicates leaving a highway from the right lane.

```
public static final Icon LEAVE_HIGHWAY_LEFT_LANE
```

An icon that indicates leaving a highway from the left lane.

```
public static final Icon HIGHWAY_KEEP_RIGHT
```

An icon that indicates keeping to the right-hand lane of a highway.

```
public static final Icon HIGHWAY_KEEP_LEFT
```

An icon that indicates keeping to the left-hand lane of a highway.

```
public static final Icon ROUNDABOUT_1
```

An icon that indicates using the first exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_2
```

An icon that indicates using the second exit encountered while navigating a roundabout in a counter-clockwise direction.

Fields

```
public static final Icon ROUNDABOUT_3
```

An icon that indicates using the third exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_4
```

An icon that indicates using the fourth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_5
```

An icon that indicates using the fifth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_6
```

An icon that indicates using the sixth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_7
```

An icon that indicates using the seventh exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_8
```

An icon that indicates using the eighth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_9
```

An icon that indicates using the ninth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_10
```

An icon that indicates using the tenth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_11
```

An icon that indicates using the eleventh exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_12
```

An icon that indicates using the twelfth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_1_LH
```

An icon that indicates using the first exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_2_LH
```

An icon that indicates using the second exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_3_LH
```

An icon that indicates using the third exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_4_LH
```

An icon that indicates using the fourth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_5_LH
```

An icon that indicates using the fifth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_6_LH
```

An icon that indicates using the sixth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_7_LH
```

An icon that indicates using the seventh exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_8_LH
```

Fields

An icon that indicates using the eighth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_9_LH
```

An icon that indicates using the ninth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_10_LH
```

An icon that indicates using the tenth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_11_LH
```

An icon that indicates using the eleventh exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_12_LH
```

An icon that indicates using the twelfth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon START
```

An icon that indicates the start point (displayed when route navigation has not yet begun).

```
public static final Icon END
```

An icon that indicates the destination point.

```
public static final Icon FERRY
```

An icon that indicates boarding a ferry.

Method Summary

Table 123: Methods in Icon

Methods

```
public static Icon valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static Maneuver.Icon[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values describing types of [Maneuver](#) icons.

Enum Constant Details

```
public static final Icon UNDEFINED
```

An undefined icon.

```
public static final Icon GO_STRAIGHT
```

An icon that indicates a straight course.

```
public static final Icon UTURN_RIGHT
```

An icon that indicates a right u-turn.

```
public static final Icon UTURN_LEFT
```

An icon that indicates a left u-turn.

```
public static final Icon KEEP_RIGHT
```

An icon that indicates keeping to the right.

```
public static final Icon LIGHT_RIGHT
```

An icon that indicates a light right turn.

```
public static final Icon QUITE_RIGHT
```

An icon that indicates a normal right turn.

```
public static final Icon HEAVY_RIGHT
```

An icon that indicates a heavy right turn.

```
public static final Icon KEEP_MIDDLE
```

Keep middle line.

```
public static final Icon KEEP_LEFT
```

An icon that indicates keeping to the left.

```
public static final Icon LIGHT_LEFT
```

An icon that indicates a light left turn.

```
public static final Icon QUITE_LEFT
```

An icon that indicates a normal left turn.

```
public static final Icon HEAVY_LEFT
```

An icon that indicates a heavy left turn.

```
public static final Icon ENTER_HIGHWAY_RIGHT_LANE
```

An icon that indicates entering a highway into the right lane.

```
public static final Icon ENTER_HIGHWAY_LEFT_LANE
```

An icon that indicates entering a highway into the left lane.

```
public static final Icon LEAVE_HIGHWAY_RIGHT_LANE
```

An icon that indicates leaving a highway from the right lane.

```
public static final Icon LEAVE_HIGHWAY_LEFT_LANE
```

An icon that indicates leaving a highway from the left lane.

```
public static final Icon HIGHWAY_KEEP_RIGHT
```

An icon that indicates keeping to the right-hand lane of a highway.

```
public static final Icon HIGHWAY_KEEP_LEFT
```

An icon that indicates keeping to the left-hand lane of a highway.

```
public static final Icon ROUNDABOUT_1
```

An icon that indicates using the first exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_2
```

An icon that indicates using the second exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_3
```

An icon that indicates using the third exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_4
```

An icon that indicates using the fourth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_5
```

An icon that indicates using the fifth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_6
```

An icon that indicates using the sixth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_7
```

An icon that indicates using the seventh exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_8
```

An icon that indicates using the eighth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_9
```

An icon that indicates using the ninth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_10
```

An icon that indicates using the tenth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_11
```

An icon that indicates using the eleventh exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_12
```

An icon that indicates using the twelfth exit encountered while navigating a roundabout in a counter-clockwise direction.

```
public static final Icon ROUNDABOUT_1_LH
```

An icon that indicates using the first exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_2_LH
```

An icon that indicates using the second exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_3_LH
```

An icon that indicates using the third exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_4_LH
```

An icon that indicates using the fourth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_5_LH
```

An icon that indicates using the fifth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_6_LH
```

An icon that indicates using the sixth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_7_LH
```

An icon that indicates using the seventh exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_8_LH
```

An icon that indicates using the eighth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_9_LH
```

An icon that indicates using the ninth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_10_LH
```

An icon that indicates using the tenth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_11_LH
```

An icon that indicates using the eleventh exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon ROUNDABOUT_12_LH
```

An icon that indicates using the twelfth exit encountered while navigating a roundabout in a clockwise direction.

```
public static final Icon START
```

An icon that indicates the start point (displayed when route navigation has not yet begun).

```
public static final Icon END
```

An icon that indicates the destination point.

```
public static final Icon FERRY
```

An icon that indicates boarding a ferry.

Method Details

```
public static Icon valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Maneuver.Icon[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

TrafficDirection

The enumeration *TrafficDirection* is a member of *com.here.android.mpa.routing.Maneuver*.

Enumeration Summary

```
public static final enumeration Maneuver.TrafficDirection
```

```
extends java.lang.Enum, java.lang.Object
```

Represents values describing possible traffic directions, the side of road on which one must drive.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 124: Enum Constants in TrafficDirection

Fields
<pre>public static final TrafficDirection LEFT</pre> <p>Traffic flows on the left side of the road, as in the UK.</p>
<pre>public static final TrafficDirection RIGHT</pre> <p>Traffic flows on the right side of the road, as in the USA.</p>

Method Summary

Table 125: Methods in TrafficDirection

Methods
<pre>public static TrafficDirection valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static Maneuver.TrafficDirection[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing possible traffic directions, the side of road on which one must drive.

Enum Constant Details

```
public static final TrafficDirection LEFT
```

Traffic flows on the left side of the road, as in the UK.

```
public static final TrafficDirection RIGHT
```

Traffic flows on the right side of the road, as in the USA.

Method Details

```
public static TrafficDirection valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Maneuver.TrafficDirection[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Turn

The enumeration *Turn* is a member of *com.here.android.mpa.routing.Maneuver*.

Enumeration Summary

```
public static final enumeration Maneuver.Turn
```

```
extends java.lang.Enum, java.lang.Object
```

Represents values describing possible turns within a *Maneuver*.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 126: Enum Constants in Turn

Fields
<pre>public static final Turn UNDEFINED</pre> <p>An undefined turn.</p>
<pre>public static final Turn NO_TURN</pre> <p>Indicates that no turn is necessary.</p>
<pre>public static final Turn KEEP_MIDDLE</pre> <p>A turn that indicates keeping to the middle when a road forks.</p>

Fields

```
public static final Turn KEEP_RIGHT
```

A turn that indicates keeping to the right when a road forks.

```
public static final Turn LIGHT_RIGHT
```

A turn that indicates making a light right turn.

```
public static final Turn QUITE_RIGHT
```

A turn that indicates making a normal right turn.

```
public static final Turn HEAVY_RIGHT
```

A turn that indicates making a heavy right turn.

```
public static final Turn KEEP_LEFT
```

A turn that indicates keeping to the left when a road forks.

```
public static final Turn LIGHT_LEFT
```

A turn that indicates making a light left turn.

```
public static final Turn QUITE_LEFT
```

A turn that indicates making a normal left turn.

```
public static final Turn HEAVY_LEFT
```

A turn that indicates making a heavy left turn.

```
public static final Turn RETURN
```

A turn that indicates turning around or making a U-turn.

```
public static final Turn ROUNDABOUT_1
```

A turn that indicates taking the first exit in a roundabout.

```
public static final Turn ROUNDABOUT_2
```

A turn that indicates taking the second exit in a roundabout.

```
public static final Turn ROUNDABOUT_3
```

A turn that indicates taking the third exit in a roundabout.

```
public static final Turn ROUNDABOUT_4
```

A turn that indicates taking the fourth exit in a roundabout.

```
public static final Turn ROUNDABOUT_5
```

A turn that indicates taking the fifth exit in a roundabout.

```
public static final Turn ROUNDABOUT_6
```

A turn that indicates taking the sixth exit in a roundabout.

```
public static final Turn ROUNDABOUT_7
```

A turn that indicates taking the seventh exit in a roundabout.

```
public static final Turn ROUNDABOUT_8
```

A turn that indicates taking the eighth exit in a roundabout.

```
public static final Turn ROUNDABOUT_9
```

Fields

A turn that indicates taking the ninth exit in a roundabout.

```
public static final Turn ROUNDABOUT_10
```

A turn that indicates taking the tenth exit in a roundabout.

```
public static final Turn ROUNDABOUT_11
```

A turn that indicates taking the eleventh exit in a roundabout.

```
public static final Turn ROUNDABOUT_12
```

A turn that indicates taking the twelfth exit in a roundabout.

Method Summary

Table 127: Methods in Turn

Methods

```
public static Turn valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static Maneuver.Turn[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values describing possible turns within a *Maneuver*.

Enum Constant Details

```
public static final Turn UNDEFINED
```

An undefined turn.

```
public static final Turn NO_TURN
```

Indicates that no turn is necessary.

```
public static final Turn KEEP_MIDDLE
```

A turn that indicates keeping to the middle when a road forks.

```
public static final Turn KEEP_RIGHT
```

A turn that indicates keeping to the right when a road forks.

```
public static final Turn LIGHT_RIGHT
```

A turn that indicates making a light right turn.

```
public static final Turn QUITE_RIGHT
```

A turn that indicates making a normal right turn.

```
public static final Turn HEAVY_RIGHT
```

A turn that indicates making a heavy right turn.

```
public static final Turn KEEP_LEFT
```

A turn that indicates keeping to the left when a road forks.

```
public static final Turn LIGHT_LEFT
```

A turn that indicates making a light left turn.

```
public static final Turn QUITE_LEFT
```

A turn that indicates making a normal left turn.

```
public static final Turn HEAVY_LEFT
```

A turn that indicates making a heavy left turn.

```
public static final Turn RETURN
```

A turn that indicates turning around or making a U-turn.

```
public static final Turn ROUNDABOUT_1
```

A turn that indicates taking the first exit in a roundabout.

```
public static final Turn ROUNDABOUT_2
```

A turn that indicates taking the second exit in a roundabout.

```
public static final Turn ROUNDABOUT_3
```

A turn that indicates taking the third exit in a roundabout.

```
public static final Turn ROUNDABOUT_4
```

A turn that indicates taking the fourth exit in a roundabout.

```
public static final Turn ROUNDABOUT_5
```

A turn that indicates taking the fifth exit in a roundabout.

```
public static final Turn ROUNDABOUT_6
```

A turn that indicates taking the sixth exit in a roundabout.

```
public static final Turn ROUNDABOUT_7
```

A turn that indicates taking the seventh exit in a roundabout.

```
public static final Turn ROUNDABOUT_8
```

A turn that indicates taking the eighth exit in a roundabout.

```
public static final Turn ROUNDABOUT_9
```

A turn that indicates taking the ninth exit in a roundabout.

```
public static final Turn ROUNDABOUT_10
```

A turn that indicates taking the tenth exit in a roundabout.

```
public static final Turn ROUNDABOUT_11
```

A turn that indicates taking the eleventh exit in a roundabout.

```
public static final Turn ROUNDABOUT_12
```

A turn that indicates taking the twelfth exit in a roundabout.

Method Details

```
public static Turn valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Maneuver.Turn[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Route

The class *Route* is a member of [com.here.android.mpa.routing](#).

Class Summary

```
public final class Route
```

```
extends java.lang.Object
```

Represents a distinct path connecting two or more waypoints *GeoCoordinate*.

[For complete information, see the section [Class Details](#)]

See also:

[RouteResult](#)

[RouteManager](#)

Nested Class Summary

Table 128: Nested Classes in Route

Nested Classes
<pre>public static final enumeration Route.TrafficPenaltyMode</pre> <p>Enumeration for calculating route duration.</p>

Field Summary

Table 129: Fields in Route

Fields
<pre>public static final int WHOLE_ROUTE</pre>

Method Summary

Table 130: Methods in Route

Methods
<pre>public GeoBoundingBox getBoundingBox ()</pre>



Methods

Gets the smallest *GeoBoundingBox* that contains the entire route.

```
public GeoCoordinate getDestination ()
```

Gets the destination coordinate for the route.

```
public Maneuver getFirstManeuver ()
```

Returns the first *Maneuver*.

```
public int getLength ()
```

Gets the length of the route, in meters.

```
public java.util.List <Maneuver> getManeuvers ()
```

Gets the list of all maneuvers that travelers will encounter along the route.

```
public RouteElements getRouteElements ()
```

```
public RouteElements getRouteElements (Maneuver maneuver)
```

Gets the *RouteElements* belonging to this *Maneuver*.

```
public RouteElements getRouteElementsFromDuration (long duration)
```

Gets the *RouteElements* for a given duration (in seconds) from the start of the route.

```
public RouteElements getRouteElementsFromDuration (long start, long duration)
```

Gets the *RouteElements* for a given duration (in seconds) within the route.

```
public RouteElements getRouteElementsFromLength (int length)
```

Gets the *RouteElements* for a given distance (in meters) within the route.

```
public RouteElements getRouteElementsFromLength (int start, int length)
```

Gets the *RouteElements* for a given distance (in meters) within the route.

```
public java.util.List <GeoCoordinate> getRouteGeometry ()
```

Gets the list of all *GeoCoordinate* values representing, in order, the polyline of the route.

```
public RoutePlan getRoutePlan ()
```

Returns the route plan for defining a route with one or more route legs.

```
public GeoCoordinate getStart ()
```

Gets the starting coordinate for the route.

```
public int getSublegCount ()
```

Returns the number of sub-legs the route has.

```
public RouteTta getTta (TrafficPenaltyMode mode, int subleg)
```

Gets the estimated time to arrival with current traffic conditions.

```
public java.util.List <GeoCoordinate> getWaypoints ()
```

Gets the list of all waypoints for the route.

Class Details

Represents a distinct path connecting two or more waypoints `GeoCoordinate`. A `Route` consists of a list of maneuvers and route links.

See also:

[RouteResult](#)

[RouteManager](#)

Field Details

```
public static final int WHOLE_ROUTE
```

Method Details

```
public GeoBoundingBox getBoundingBox ()
```

Gets the smallest `GeoBoundingBox` that contains the entire route.

Returns:

The `GeoBoundingBox`

```
public GeoCoordinate getDestination ()
```

Gets the destination coordinate for the route.

Returns:

The destination `GeoCoordinate`

```
public Maneuver getFirstManeuver ()
```

Returns the first `Maneuver`.

Returns:

the first `Maneuver`, null if there are no maneuvers

```
public int getLength ()
```

Gets the length of the route, in meters.

Returns:

The route length in meters

```
public java.util.List <Maneuver> getManeuvers ()
```



Gets the list of all maneuvers that travelers will encounter along the route.

Returns:

The list of [Maneuver](#) objects

```
public RouteElements getRouteElements ()
```

```
public RouteElements getRouteElements (Maneuver maneuver)
```

Gets the [RouteElements](#) belonging to this [Maneuver](#).

Parameters:

- **maneuver**

The Maneuver to get the RouteElements for.

Returns:

The RouteElements belonging to this Maneuver.

```
public RouteElements getRouteElementsFromDuration (long duration)
```

Gets the [RouteElements](#) for a given duration (in seconds) from the start of the route.

Parameters:

- **duration**

The number of seconds from the beginning of the route.

Returns:

The RouteElements within the given duration.

```
public RouteElements getRouteElementsFromDuration (long start, long duration)
```

Gets the [RouteElements](#) for a given duration (in seconds) within the route.

Parameters:

- **start**

The number of seconds into the route to start getting RouteElements.

- **duration**

The number of seconds from the given start of the route.

Returns:

The RouteElements within the given duration.

```
public RouteElements getRouteElementsFromLength (int length)
```

Gets the *RouteElements* for a given distance (in meters) within the route.

Parameters:

- **length**

The number of meters from the beginning of the route.

Returns:

The *RouteElements* within the given distance.

```
public RouteElements getRouteElementsFromLength (int start, int length)
```

Gets the *RouteElements* for a given distance (in meters) within the route.

Parameters:

- **start**

The number of meters into the route to start getting *RouteElements*.

- **length**

The number of meters from the start parameter within this route.

Returns:

The *RouteElements* within the given distance.

```
public java.util.List <GeoCoordinate> getRouteGeometry ()
```

Gets the list of all *GeoCoordinate* values representing, in order, the polyline of the route.

Returns:

A list of *GeoCoordinate* values

See also:

[MapPolyline](#)

```
public RoutePlan getRoutePlan ()
```

Returns the route plan for defining a route with one or more route legs. Route legs are formed by a list of stop overs in the route plan. Each route leg has its own route options.

Returns:

[RoutePlan](#)

```
public GeoCoordinate getStart ()
```

Gets the starting coordinate for the route.

Returns:

The starting GeoCoordinate

```
public int getSublegCount ()
```

Returns the number of sub-legs the route has. A sub leg is the part of a route between two stop waypoints

Returns:

number of sublegs

```
public RouteTta getTta (TrafficPenaltyMode mode, int subleg)
```

Gets the estimated time to arrival with current traffic conditions. If traffic is to be used, the caller is recommended to obtain a traffic update for the route first (and wait for it to complete) to populate the traffic database.

This method requires the Traffic Enabled Car Routing permission in order to be used when mode is *OPTIMAL*. Please contact a HERE customer representative to acquire this permission.

Parameters:

- **mode**

The *Route.TrafficPenaltyMode* to be used for this calculation. Must not be *AVOID_CONGESTION*.

- **subleg**

The subleg number to use or *WHOLE_ROUTE* for the whole route.

Returns:

The *RouteTta* of the subleg.

Throws:

- **IllegalArgumentException**

If mode is *AVOID_CONGESTION*.

- **IllegalArgumentException**

If subleg is smaller than zero or greater or equal to *getSublegCount()*.

- **AccessControlException**

If the required permission is missing.

```
public java.util.List <GeoCoordinate> getWaypoints ()
```

Gets the list of all waypoints for the route.

Returns:

The list of *GeoCoordinate* objects

TrafficPenaltyMode

The enumeration `TrafficPenaltyMode` is a member of `com.here.android.mpa.routing.Route`.

Enumeration Summary

public static final enumeration `Route.TrafficPenaltyMode`

extends java.lang.Enum, java.lang.Object

Enumeration for calculating route duration.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 131: Enum Constants in `TrafficPenaltyMode`

Fields
<pre>public static final TrafficPenaltyMode DISABLED</pre>
Default mode.
<pre>public static final TrafficPenaltyMode OPTIMAL</pre>
Use speed informations to compute a time optimized route.
<pre>public static final TrafficPenaltyMode AVOID_CONGESTION</pre>
Avoid road closed and severe congestion.

Method Summary

Table 132: Methods in `TrafficPenaltyMode`

Methods
<pre>public static TrafficPenaltyMode valueOf (String name)</pre>
This method retrieves the enumeration value that matches the name specified by the caller.
<pre>public static Route.TrafficPenaltyMode[] values ()</pre>
This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Enumeration for calculating route duration. This is the mode used for traffic events handling. See `Route.getTta(TrafficPenaltyMode, int)`.

Enum Constant Details

`public static final TrafficPenaltyMode DISABLED`

Default mode. Route duration calculation will not take any traffic penalty into consideration

```
public static final TrafficPenaltyMode OPTIMAL
```

Use speed informations to compute a time optimized route.

```
public static final TrafficPenaltyMode AVOID_CONGESTION
```

Avoid road closed and severe congestion.

Method Details

```
public static TrafficPenaltyMode valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Route.TrafficPenaltyMode[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

RouteElement

The class *RouteElement* is a member of [com.here.android.mpa.routing](#) .

Class Summary

```
public final class RouteElement
```

extends java.lang.Object

Represents an element within a [Route](#).

[For complete information, see the section [Class Details](#)]

See also:

[Route](#)

[Maneuver](#)

Nested Class Summary

Table 133: Nested Classes in RouteElement

Nested Classes
<pre>public static final enumeration RouteElement.Type</pre> <p>Represents values describing the possible types of a <i>RouteElement</i>.</p>

Method Summary

Table 134: Methods in RouteElement

Methods
<pre>public java.util.List <GeoCoordinate> getGeometry ()</pre> <p>Returns the geometry of the route element.</p>
<pre>public RoadElement getRoadElement ()</pre> <p>Returns the <i>RoadElement</i> associated with this <i>RouteElement</i>.</p>
<pre>public Type getType ()</pre> <p>Gets the type of the <i>RouteElement</i></p>

Class Details

Represents an element within a *Route*. Please note that *RouteElements* are also associated with *Maneuver* instances within a *Route*.

See also:

[Route](#)

[Maneuver](#)

Method Details

```
public java.util.List <GeoCoordinate> getGeometry ()
```

Returns the geometry of the route element. The geometry is returned as a list of *GeoCoordinate* that can be used to create a polyline.

Returns:

a list of *GeoCoordinate*

```
public RoadElement getRoadElement ()
```

Returns the *RoadElement* associated with this *RouteElement*. Each route element has an associated road element.

Returns:

the associated *RoadElement*.

`public Type getType ()`

Gets the type of the *RouteElement*

Returns:

type of the *RouteElement*

Type

The enumeration *Type* is a member of `com.here.android.mpa.routing.RouteElement`.

Enumeration Summary

`public static final enumeration RouteElement.Type`

`extends java.lang.Enum, java.lang.Object`

Represents values describing the possible types of a *RouteElement*.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 135: Enum Constants in Type

Fields
<code>public static final Type ROAD</code>
Type of <i>RouteElement</i> is road.
<code>public static final Type INVALID</code>
Type of <i>RouteElement</i> is invalid.

Method Summary

Table 136: Methods in Type

Methods
<code>public static Type valueOf (String name)</code>
This method retrieves the enumeration value that matches the name specified by the caller.
<code>public static RouteElement.Type[] values ()</code>
This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values describing the possible types of a *RouteElement*.

Enum Constant Details

public static final Type ROAD

Type of *RouteElement* is road.

public static final Type INVALID

Type of *RouteElement* is invalid.

Method Details

public static Type valueOf (String name)

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

public static RouteElement.Type[] values ()

This method retrieves an array of constants of the given enum type in the order in which they are declared.

RouteElements

The class *RouteElements* is a member of [com.here.android.mpa.routing](#).

Class Summary

public final class RouteElements

extends java.lang.Object

Holds the list of *RouteElement* objects obtained from the *Route* class.

[For complete information, see the section [Class Details](#)]

See also:

[getRouteElements\(\)](#)

[getRouteElements\(Maneuver\)](#)

[getRouteElementsFromDuration\(long\)](#)

`getRouteElementsFromDuration(long, long)`
`getRouteElementsFromLength(int)`
`getRouteElementsFromLength(int, int)`

Method Summary

Table 137: Methods in RouteElements

Methods
<code>public java.util.List <RouteElement> getElements ()</code> Returns the list of <code>RouteElement</code> .
<code>public GeoPolyline getGeometry ()</code> Returns the <code>GeoPolyline</code> .

Class Details

Holds the list of `RouteElement` objects obtained from the `Route` class.

See also:

`getRouteElements()`
`getRouteElements(Maneuver)`
`getRouteElementsFromDuration(long)`
`getRouteElementsFromDuration(long, long)`
`getRouteElementsFromLength(int)`
`getRouteElementsFromLength(int, int)`

Method Details

`public java.util.List <RouteElement> getElements ()`

Returns the list of `RouteElement`.

Returns:

The list of `RouteElement` objects contained in this `RouteElements` object.

`public GeoPolyline getGeometry ()`

Returns the `GeoPolyline`. The points on the polyline represent the elements contained in this `RouteElements`.

Returns:

The `GeoPolyline` associated with this `RouteElements` object.

RouteManager

The class `RouteManager` is a member of `com.here.android.mpa.routing`.

Class Summary

```
public class RouteManager  
extends java.lang.Object
```

Represents a manager responsible for calculating a `Route` from a `RoutePlan`, with a `RouteManager.Listener` to monitor calculation progress and trigger appropriate callback methods upon completion.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 138: Nested Classes in RouteManager

Nested Classes
<pre>public static final enumeration RouteManager.Error</pre> <p>Represents values describing possible route calculation errors.</p>
<pre>public static abstract interface RouteManager.Listener</pre> <p>Represents a listener to provide information about <code>RouteManager</code> events.\</p>

Constructor Summary

Table 139: Constructors in RouteManager

Constructors
<code>RouteManager ()</code>

Method Summary

Table 140: Methods in RouteManager

Methods
<pre>public Error calculateRoute (RoutePlan routePlan, Listener listener)</pre> <p>Invokes an asynchronous route calculation.</p>
<pre>public void cancel ()</pre> <p>Cancels the current route calculation.</p>
<pre>public boolean isBusy ()</pre> <p>Query whether the <code>RouteManager</code> is currently busy computing a route.</p>

Class Details

Represents a manager responsible for calculating a [Route](#) from a [RoutePlan](#), with a [RouteManager.Listener](#) to monitor calculation progress and trigger appropriate callback methods upon completion.

Before using a `RouteManager`, an application must set appropriate the HERE developer credentials.

Constructor Details

`RouteManager ()`

Method Details

`public Error calculateRoute (RoutePlan routePlan, Listener listener)`

Invokes an asynchronous route calculation. Upon completion of the request, the `Listener` will be invoked regardless if the request is completed successfully or not.

Parameters:

- `routePlan`
A `RoutePlan` used to calculate the route
- `listener`
A `Listener` for the `RouteManager`

Returns:

The `RouteManager.Error` error code, one of:

- `RouteManager.Error#NONE` if route calculation is started
- `RouteManager.Error#INVALID_OPERATION` if a route calculation could not be started because a calculation is already in progress
- `RouteManager.Error#INVALID_PARAMETERS` if any of the input parameters is `null`
- All other errors also indicate route calculation could not be started

`public void cancel ()`

Cancels the current route calculation. Note that this API is asynchronous as it takes some time cancel all underlying operations. {Please use `RouteManager#isBusy ()` to check when the `RouteManager` is free again.

`public boolean isBusy ()`

Query whether the `RouteManager` is currently busy computing a route.

Returns:

true if a route calculation is ongoing, false otherwise.

Error

The enumeration `Error` is a member of `com.here.android.mpa.routing.RouteManager`.

Enumeration Summary

public static final enumeration **RouteManager.Error**

extends java.lang.Enum, java.lang.Object

Represents values describing possible route calculation errors.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 141: Enum Constants in Error

Fields
<pre>public static final Error NONE</pre> <p>There was no calculation error.</p>
<pre>public static final Error UNKNOWN</pre> <p>There was an unknown error preventing calculation.</p>
<pre>public static final Error OUT_OF_MEMORY</pre> <p>An out-of-memory error prevented calculation.</p>
<pre>public static final Error INVALID_PARAMETERS</pre> <p>Parameters passed to <code>RouteManager.calculateRoute(RoutePlan,Listener)</code> were invalid.</p>
<pre>public static final Error INVALID_OPERATION</pre> <p>The operation is not allowed at this time because another request is in progress.</p>
<pre>public static final Error GRAPH_DISCONNECTED</pre> <p>No route was found.</p>
<pre>public static final Error GRAPH_DISCONNECTED_CHECK_OPTIONS</pre> <p>No route was found, one of the <code>RouteOptions</code> might be preventing calculation.</p>
<pre>public static final Error NO_START_POINT</pre> <p>No start point was found.</p>
<pre>public static final Error NO_END_POINT</pre> <p>No end point was found.</p>
<pre>public static final Error NO_END_POINT_CHECK_OPTIONS</pre> <p>The end point is unreachable, possibly due to one of the <code>RouteOptions</code>.</p>
<pre>public static final Error CANNOT_DO_PEDESTRIAN</pre> <p>A <code>PEDESTRIAN</code> transport mode was set but was not practical (possibly the route is too long).</p>

Fields

```
public static final Error ROUTING_CANCELLED
```

An application user cancelled the calculation.

```
public static final Error VIOLATES_OPTIONS
```

A route was found but is invalid because it makes use of roads that were disabled by *RouteOptions*.

```
public static final Error ROUTE_CORRUPTED
```

Could not decode the route as received from the server.

```
public static final Error INVALID_CREDENTIALS
```

The route cannot be calculated because the HERE Developer credentials are invalid or were not provided.

```
public static final Error REQUEST_TIMEOUT
```

The online route calculation request has timed out.

```
public static final Error OPERATION_NOT_ALLOWED
```

The required permission to use Online Public Transport Routing or Traffic Enabled Car Routing is missing.

```
public static final Error NO_CONNECTIVITY
```

No internet connection is available.

Method Summary

Table 142: Methods in Error

Methods

```
public static Error valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static RouteManager.Error[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values describing possible route calculation errors.

Enum Constant Details

```
public static final Error NONE
```

There was no calculation error.

```
public static final Error UNKNOWN
```

There was an unknown error preventing calculation.

```
public static final Error OUT_OF_MEMORY
```



An out-of-memory error prevented calculation.

```
public static final Error INVALID_PARAMETERS
```

Parameters passed to `RouteManager.calculateRoute(RoutePlan,Listener)` were invalid.

```
public static final Error INVALID_OPERATION
```

The operation is not allowed at this time because another request is in progress.

```
public static final Error GRAPH_DISCONNECTED
```

No route was found.

```
public static final Error GRAPH_DISCONNECTED_CHECK_OPTIONS
```

No route was found, one of the `RouteOptions` might be preventing calculation.

```
public static final Error NO_START_POINT
```

No start point was found.

```
public static final Error NO_END_POINT
```

No end point was found.

```
public static final Error NO_END_POINT_CHECK_OPTIONS
```

The end point is unreachable, possibly due to one of the `RouteOptions`.

```
public static final Error CANNOT_DO_PEDESTRIAN
```

A `PEDESTRIAN` transport mode was set but was not practical (possibly the route is too long).

```
public static final Error ROUTING_CANCELLED
```

An application user cancelled the calculation.

```
public static final Error VIOLATES_OPTIONS
```

A route was found but is invalid because it makes use of roads that were disabled by `RouteOptions`.

```
public static final Error ROUTE_CORRUPTED
```

Could not decode the route as received from the server.

```
public static final Error INVALID_CREDENTIALS
```

The route cannot be calculated because the HERE Developer credentials are invalid or were not provided.

```
public static final Error REQUEST_TIMEOUT
```

The online route calculation request has timed out.

```
public static final Error OPERATION_NOT_ALLOWED
```

The required permission to use Online Public Transport Routing or Traffic Enabled Car Routing is missing.

```
public static final Error NO_CONNECTIVITY
```

No internet connection is available.

Method Details

```
public static Error valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RouteManager.Error[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Listener

The interface *Listener* is a member of *com.here.android.mpa.routing.RouteManager*.

Interface Summary

```
public static abstract interface RouteManager.Listener
```

Represents a listener to provide information about *RouteManager* events.\

[For complete information, see the section [Interface Details](#)]

See also:

[calculateRoute\(RoutePlan, Listener\)](#)

Method Summary

Table 143: Methods in Listener

Methods
<pre>public abstract void onCalculateRouteFinished (Error errorCode, java.util.List <RouteResult> routeResults)</pre> <p>A callback indicating that a route calculation operation has finished.</p>
<pre>public abstract void onProgress (int percentage)</pre> <p>A callback indicating the progress level of the current route calculation operation, a percentage value within the range of [0..100].</p>

Interface Details

Represents a listener to provide information about [RouteManager](#) events.\

See also:

[calculateRoute\(RoutePlan, Listener\)](#)

Method Details

```
public abstract void onCalculateRouteFinished (Error errorCode,  
java.util.List <RouteResult> routeResults)
```

A callback indicating that a route calculation operation has finished. In the case of [VIOLATES_OPTIONS](#), one or more [RouteResult](#) in the returned list contains a list of violated [RouteOptions](#). For other [java.lang.Error](#), the list size of [RouteResult](#) will be 0.

Parameters:

- **errorCode**
A [java.lang.Error](#) indicating the error code for the route calculation (could be [NONE](#))
- **routeResults**
A List of [RouteResult](#)

See also:

[getViolatedOptions\(\)](#)

```
public abstract void onProgress (int percentage)
```

A callback indicating the progress level of the current route calculation operation, a percentage value within the range of [0..100]. Note that in certain circumstances a recalculation is required and this percentage will go from 100 to 0.

Parameters:

- **percentage**

Progress completion percentage

RouteOptions

The class *RouteOptions* is a member of [com.here.android.mpa.routing](#).

Class Summary

public final class **RouteOptions**

extends java.lang.Object

This is the definition of the *RouteOptions* class.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 144: Nested Classes in RouteOptions

Nested Classes
public static final enumeration RouteOptions.TimeType Ways that the time can be specified.
public static final enumeration RouteOptions.TransportMode Represents values describing different mode of transportation a person will be using.
public static final enumeration RouteOptions.Type Represents different types of routing, such as by speed or by distance.

Constructor Summary

Table 145: Constructors in RouteOptions

Constructors
<code>RouteOptions ()</code> Public Constructor

Method Summary

Table 146: Methods in RouteOptions

Methods
<pre>public boolean areCarShuttleTrainsAllowed ()</pre> <p>Checks whether Car Shuttle Trains are allowed.</p>
<pre>public boolean areDirtRoadsAllowed ()</pre> <p>Checks whether Dirt Roads are allowed.</p>
<pre>public boolean areFerriesAllowed ()</pre> <p>Checks whether Ferries are allowed.</p>
<pre>public boolean areHighwaysAllowed ()</pre> <p>Checks whether Highways are allowed.</p>
<pre>public boolean areParksAllowed ()</pre> <p>Checks whether Parks are allowed.</p>
<pre>public boolean areTollRoadsAllowed ()</pre> <p>Checks whether Toll Roads are allowed.</p>
<pre>public boolean areTunnelsAllowed ()</pre> <p>Checks whether Tunnels are allowed.</p>
<pre>public int getRouteCount ()</pre> <p>Gets the current desired number of route</p>
<pre>public Type getRouteType ()</pre> <p>Gets the Route Type, see <i>RouteOptions.Type</i> for valid values</p>
<pre>public int getStartDirection ()</pre> <p>Returns the start direction.</p>
<pre>public TimeType getTime (Date date)</pre> <p>Gets the arrival or departure time that has been set.</p>
<pre>public TransportMode getTransportMode ()</pre> <p>Gets the Transport Mode, see <i>RouteOptions.TransportMode</i> for valid values</p>
<pre>public boolean isCarpoolAllowed ()</pre> <p>Check if usage of HOV/Carpool roads is allowed.</p>
<pre>public RouteOptions setCarShuttleTrainsAllowed (boolean value)</pre> <p>Sets whether Car Shuttle Trains are allowed.</p>
<pre>public RouteOptions setCarpoolAllowed (boolean value)</pre> <p>Allow or disallow usage of HOV/Carpool roads.</p>
<pre>public RouteOptions setDirtRoadsAllowed (boolean value)</pre> <p>Sets whether Dirt Roads are allowed.</p>

Methods

```
public RouteOptions setFerriesAllowed (boolean value)
```

Sets whether Ferries are allowed.

```
public RouteOptions setHighwaysAllowed (boolean value)
```

Sets whether Highways are allowed.

```
public RouteOptions setParksAllowed (boolean value)
```

Sets whether Parks are allowed.

```
public RouteOptions setRouteCount (int count)
```

Sets the desired number of route.

```
public RouteOptions setRouteType (Type routeType)
```

Sets the Route Type, see [RouteOptions.Type](#) for valid values

```
public RouteOptions setStartDirection (int dirInDegrees)
```

Start direction.

```
public RouteOptions setTime (Date time, TimeType type)
```

Sets the arrival or departure time.

```
public RouteOptions setTollRoadsAllowed (boolean value)
```

Sets whether Toll Roads are allowed.

```
public RouteOptions setTransportMode (TransportMode mode)
```

Sets the Transport Mode.

```
public RouteOptions setTunnelsAllowed (boolean value)
```

Sets whether Tunnels are allowed.

Class Details

This is the definition of the [RouteOptions](#) class. The class contains options for route calculation.

Constructor Details

RouteOptions ()

Public Constructor

Method Details

```
public boolean areCarShuttleTrainsAllowed ()
```

Checks whether Car Shuttle Trains are allowed.

Returns:

true if allowed otherwise false.

```
public boolean areDirtRoadsAllowed ()
```

Checks whether Dirt Roads are allowed.

Returns:

true if allowed otherwise false.

```
public boolean areFerriesAllowed ()
```

Checks whether Ferries are allowed.

Returns:

true if allowed otherwise false.

```
public boolean areHighwaysAllowed ()
```

Checks whether Highways are allowed.

Returns:

true if allowed otherwise false.

```
public boolean areParksAllowed ()
```

Checks whether Parks are allowed.

Returns:

true if allowed otherwise false.

```
public boolean areTollRoadsAllowed ()
```

Checks whether Toll Roads are allowed.

Returns:

true if allowed otherwise false.

```
public boolean areTunnelsAllowed ()
```

Checks whether Tunnels are allowed.

Returns:

true if allowed otherwise false.

```
public int getRouteCount ()
```

Gets the current desired number of route

Returns:

current desired number of route

```
public Type getRouteType ()
```

Gets the Route Type, see [RouteOptions.Type](#) for valid values

Returns:

The current Type.

```
public int getStartDirection ()
```

Returns the start direction.

Returns:

The start direction in degrees. Value is between 0-359.

```
public TimeType getTime (Date date)
```

Gets the arrival or departure time that has been set.

Parameters:

- **date**

Output parameter where the date will be set. This may be null if the caller is only interested in the [RouteOptions.TimeType](#).

Returns:

The TimeType of the parameter upon completion.

```
public TransportMode getTransportMode ()
```

Gets the Transport Mode, see [RouteOptions.TransportMode](#) for valid values

Returns:

The {code TransportMode} to be used for this RouteOptions.

```
public boolean isCarpoolAllowed ()
```

Check if usage of HOV/Carpool roads is allowed.

Returns:

true if allowed, otherwise false.

```
public RouteOptions setCarShuttleTrainsAllowed (boolean value)
```

Sets whether Car Shuttle Trains are allowed.

Parameters:

- **value**

true if allowed otherwise false.

Returns:

The modified RouteOptions itself.

```
public RouteOptions setCarpoolAllowed (boolean value)
```

Allow or disallow usage of HOV/Carpool roads.

Parameters:

- **value**

Use true if allowed, otherwise false.

Returns:

The modified RouteOptions itself.

```
public RouteOptions setDirtRoadsAllowed (boolean value)
```

Sets whether Dirt Roads are allowed.

Parameters:

- **value**

true if allowed otherwise false.

Returns:

The modified RouteOptions itself.

```
public RouteOptions setFerriesAllowed (boolean value)
```

Sets whether Ferries are allowed.

Parameters:

- **value**

true if allowed otherwise false.

Returns:

The modified RouteOptions itself.

```
public RouteOptions setHighwaysAllowed (boolean value)
```

Sets whether Highways are allowed.

Parameters:

- **value**

true if allowed otherwise false.

Returns:

The modified RouteOptions itself.

```
public RouteOptions setParksAllowed (boolean value)
```

Sets whether Parks are allowed.

Parameters:

- **value**

Use true if allowed, otherwise false.

Returns:

The modified RouteOptions itself.

```
public RouteOptions setRouteCount (int count)
```

Sets the desired number of route.

Values greater than 10 are ignored if *RouteOptions.TransportMode* is set to public transport and online timetables are enabled.

Parameters:

- **count**

route count

Returns:

The modified RouteOptions itself.

```
public RouteOptions setRouteType (Type routeType)
```

Sets the Route Type, see *RouteOptions.Type* for valid values

Parameters:

- **routeType**

Type

Returns:

The modified RouteOptions itself.

```
public RouteOptions setStartDirection (int dirInDegrees)
```

Start direction. The direction routing should start. Used for example not to route against one way streets. The direction is disregarded, if `RouteOptions.TransportMode` is pedestrian. Use values between 0-359. If greater value than 359 is specified, modulo of 360 is used.

Parameters:

- **dirInDegrees**

Start direction in degrees. 0 is north, increases clockwise (ie. 90 is east).

Returns:

The modified `RouteOptions` itself.

```
public RouteOptions setTime (Date time, TimeType type)
```

Sets the arrival or departure time.

Parameters:

- **time**

The time to set.

- **type**

The type of time to set.

Returns:

The modified `RouteOptions` itself.

Throws:

- **IllegalArgumentException**

If type is set to ARRIVAL, because it is not supported.

```
public RouteOptions setTollRoadsAllowed (boolean value)
```

Sets whether Toll Roads are allowed.

Parameters:

- **value**

true if allowed otherwise false.

Returns:

The modified `RouteOptions` itself.

```
public RouteOptions setTransportMode (TransportMode mode)
```

Sets the Transport Mode.

Parameters:

- **mode**

The desired *RouteOptions.TransportMode* to use.

Returns:

The modified *RouteOptions* itself.

```
public RouteOptions setTunnelsAllowed (boolean value)
```

Sets whether Tunnels are allowed.

Parameters:

- **value**

true if allowed otherwise false.

Returns:

The modified *RouteOptions* itself.

TimeType

The enumeration *TimeType* is a member of *com.here.android.mpa.routing.RouteOptions*.

Enumeration Summary

```
public static final enumeration RouteOptions.TimeType
```

extends java.lang.Enum, java.lang.Object

Ways that the time can be specified.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 147: Enum Constants in TimeType

Fields
<pre>public static final TimeType DEPARTURE</pre>
Departure time.
<pre>public static final TimeType ARRIVAL</pre>
Arrival time.

Method Summary

Table 148: Methods in TimeType

Methods
<pre>public static TimeType valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static RouteOptions.TimeType[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Ways that the time can be specified.

Enum Constant Details

```
public static final TimeType DEPARTURE
```

Departure time.

```
public static final TimeType ARRIVAL
```

Arrival time. NOTE: ARRIVAL time type option is currently unsupported. Using this value in `RouteOptions.setTime(Date, TimeType)` will result in an `IllegalArgumentException` to be thrown.

Method Details

```
public static TimeType valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RouteOptions.TimeType[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

TransportMode

The enumeration `TransportMode` is a member of `com.here.android.mpa.routing.RouteOptions`.

Enumeration Summary

public static final enumeration **RouteOptions.TransportMode**

extends java.lang.Enum, java.lang.Object

Represents values describing different mode of transportation a person will be using.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 149: Enum Constants in TransportMode

Fields
<pre>public static final TransportMode CAR</pre> <p>A car is being used as the mode of transportation.</p>
<pre>public static final TransportMode PEDESTRIAN</pre> <p>Walking is being used as the mode of transportation.</p>
<pre>public static final TransportMode UNDEFINED</pre> <p>Routing mode unknown or unsupported</p>

Method Summary

Table 150: Methods in TransportMode

Methods
<pre>public static TransportMode valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static RouteOptions.TransportMode[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing different mode of transportation a person will be using. (for example, Car, or Pedestrian).

Enum Constant Details

public static final TransportMode **CAR**

A car is being used as the mode of transportation.

public static final TransportMode **PEDESTRIAN**

Walking is being used as the mode of transportation.

```
public static final TransportMode UNDEFINED
```

Routing mode unknown or unsupported

Method Details

```
public static TransportMode valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RouteOptions.TransportMode[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Type

The enumeration *Type* is a member of *com.here.android.mpa.routing.RouteOptions*.

Enumeration Summary

```
public static final enumeration RouteOptions.Type
```

extends java.lang.Enum, java.lang.Object

Represents different types of routing, such as by speed or by distance.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 151: Enum Constants in Type

Fields
<pre>public static final Type FASTEST</pre> <p>Search for the fastest route (minimizes travel time).</p>
<pre>public static final Type SHORTEST</pre> <p>Search for the shortest route (minimizes travel distance).</p>

Method Summary

Table 152: Methods in Type

Methods
<pre>public static Type valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static RouteOptions.Type[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents different types of routing, such as by speed or by distance.

Note: a Type has no effect on [PEDESTRIAN](#) transport mode, since it always uses [FASTEST](#) (if [SHORTEST](#) is set as the Type when one of these TransportMode types is selected, it will be reset to [FASTEST](#) when a [Route](#) is calculated).

Enum Constant Details

```
public static final Type FASTEST
```

Search for the fastest route (minimizes travel time).

```
public static final Type SHORTEST
```

Search for the shortest route (minimizes travel distance). Car Mode Only

Method Details

```
public static Type valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RouteOptions.Type[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

RoutePlan

The class `RoutePlan` is a member of `com.here.android.mpa.routing`.

Class Summary

```
public final class RoutePlan
```

```
extends java.lang.Object
```

This is the definition of the `RoutePlan` class.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 153: Constructors in `RoutePlan`

Constructors
<code>RoutePlan ()</code>

Method Summary

Table 154: Methods in `RoutePlan`

Methods
<pre>public RoutePlan addWaypoint (GeoCoordinate point)</pre> <p>Adds a waypoint to the plan.</p>
<pre>public RouteOptions getRouteOptions ()</pre> <p>Gets the route options.</p>
<pre>public GeoCoordinate getWaypointAt (int index)</pre> <p>Gets a waypoint at a specified index.</p>
<pre>public int getWaypointCount ()</pre> <p>Gets the number of waypoints of the route plan.</p>
<pre>public RoutePlan insertWaypoint (GeoCoordinate point, int index)</pre> <p>Inserts a waypoint into a list of existing waypoints.</p>
<pre>public RoutePlan removeAllWaypoints ()</pre> <p>Removes all waypoints of the route plan.</p>
<pre>public RoutePlan removeWaypoint (int index)</pre> <p>Removes a waypoint at a specified index.</p>
<pre>public RoutePlan setRouteOptions (RouteOptions options)</pre> <p>Sets the route options.</p>

Class Details

This is the definition of the `RoutePlan` class. A `RoutePlan` contains all information needed to calculate a route. It can carry a number of way points `GeoCoordinate`.

Constructor Details

`RoutePlan ()`

Method Details

`public RoutePlan addWaypoint (GeoCoordinate point)`

Adds a waypoint to the plan.

Parameters:

- `point`

The `GeoCoordinate` waypoint to add.

Returns:

This `RoutePlan` object

`public RouteOptions getRouteOptions ()`

Gets the route options.

Returns:

`RouteOptions` options associated with this plan.

`public GeoCoordinate getWaypointAt (int index)`

Gets a waypoint at a specified index.

Parameters:

- `index`

The zero-based index.

Returns:

the waypoint, NULL if the index submitted is out of bounds.

`public int getWaypointCount ()`

Gets the number of waypoints of the route plan.

Returns:

the number of waypoints.

```
public RoutePlan insertWaypoint (GeoCoordinate point, int index)
```

Inserts a waypoint into a list of existing waypoints. The position of the new waypoint is according to the specified index.

Parameters:

- **point**
The waypoint to insert
- **index**
The index in the range from 0 to the number of already existing waypoints.

Returns:

This RoutePlan object

```
public RoutePlan removeAllWaypoints ()
```

Removes all waypoints of the route plan.

Returns:

This RoutePlan object

```
public RoutePlan removeWaypoint (int index)
```

Removes a waypoint at a specified index.

Parameters:

- **index**
The zero-based index.

Returns:

This RoutePlan object

```
public RoutePlan setRouteOptions (RouteOptions options)
```

Sets the route options. This method does not retain a reference to `options`. If the `options` object is updated, then this method must be called again for the changes to be in effect.

Parameters:

- **options**
The `RouteOptions` to set.

RouteResult

The class `RouteResult` is a member of `com.here.android.mpa.routing`.

Class Summary

```
public final class RouteResult
```

```
extends java.lang.Object
```

This is the definition of the `RouteResult` class.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 155: Nested Classes in `RouteResult`

Nested Classes

```
public static final enumeration RouteResult.ViolatedOption
```

These are options which may be ignored by the routing engine; in such cases a list of violated options is returned in the listener's `on_end()` method.

Method Summary

Table 156: Methods in `RouteResult`

Methods

```
public Route getRoute ()
```

Returns the `Route` in the `RouteResult`.

```
public java.util.EnumSet <ViolatedOption> getViolatedOptions ()
```

Gets the violated options.

Class Details

This is the definition of the `RouteResult` class. It contains a `Route` as a result of route calculation and a list of possible `RouteResult.ViolatedOption`

Method Details

```
public Route getRoute ()
```

Returns the `Route` in the `RouteResult`.

Returns:

The `Route`

```
public java.util.EnumSet <ViolatedOption> getViolatedOptions ()
```

Gets the violated options.

Returns:

Set of [RouteResult.ViolatedOption](#)

ViolatedOption

The enumeration *ViolatedOption* is a member of [com.here.android.mpa.routing.RouteResult](#).

Enumeration Summary

```
public static final enumeration RouteResult.ViolatedOption
```

```
extends java.lang.Enum, java.lang.Object
```

These are options which may be ignored by the routing engine; in such cases a list of violated options is returned in the listener's `on_end()` method.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 157: Enum Constants in ViolatedOption

Fields
<pre>public static final ViolatedOption AVOID_HIGHWAYS</pre> <p>The route uses highways although ALLOW_HIGHWAYS was false.</p>
<pre>public static final ViolatedOption AVOID_TOLL_ROADS</pre> <p>The route uses toll roads although ALLOW_TOLLROADS was false.</p>
<pre>public static final ViolatedOption AVOID_FERRIES</pre> <p>The route uses ferries although ALLOW_FERRIES was false.</p>
<pre>public static final ViolatedOption AVOID_TUNNELS</pre> <p>The route uses tunnels although ALLOW_TUNNELS was false.</p>
<pre>public static final ViolatedOption AVOID_DIRT_ROADS</pre> <p>The route uses dirt roads although ALLOW_DIRTROADS was false.</p>
<pre>public static final ViolatedOption AVOID_CAR_SHUTTLE_TRAINS</pre> <p>The route uses rail ferries although AVOID_CARSHUTTLETRAINS was false.</p>
<pre>public static final ViolatedOption AVOID_PARKS</pre> <p>The route uses paths through parks although ALLOW_PARKS was false.</p>
<pre>public static final ViolatedOption BLOCKED_ROADS</pre> <p>The route uses roads which were blocked by dynamic penalties.</p>

Fields

```
public static final ViolatedOption START_DIRECTION
```

The route's start direction is not as requested.

```
public static final ViolatedOption CARPOOL
```

The route uses CARPOOL streets even though it is disabled in the options

```
public static final ViolatedOption TIME_RESTRICTED_TURN
```

The route uses a time-restricted turn

Method Summary

Table 158: Methods in ViolatedOption

Methods

```
public static ViolatedOption valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static RouteResult.ViolatedOption[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

These are options which may be ignored by the routing engine; in such cases a list of violated options is returned in the listener's on_end() method.

Enum Constant Details

```
public static final ViolatedOption AVOID_HIGHWAYS
```

The route uses highways although ALLOW_HIGHWAYS was false.

```
public static final ViolatedOption AVOID_TOLL_ROADS
```

The route uses toll roads although ALLOW_TOLLROADS was false.

```
public static final ViolatedOption AVOID_FERRIES
```

The route uses ferries although ALLOW_FERRIES was false.

```
public static final ViolatedOption AVOID_TUNNELS
```

The route uses tunnels although ALLOW_TUNNELS was false.

```
public static final ViolatedOption AVOID_DIRT_ROADS
```

The route uses dirt roads although ALLOW_DIRTROADS was false.

```
public static final ViolatedOption AVOID_CAR_SHUTTLE_TRAINS
```

The route uses rail ferries although AVOID_CARSHUTTLETRAINS was false.

```
public static final ViolatedOption AVOID_PARKS
```

The route uses paths through parks although ALLOW_PARKS was false.

```
public static final ViolatedOption BLOCKED_ROADS
```

The route uses roads which were blocked by dynamic penalties.

```
public static final ViolatedOption START_DIRECTION
```

The route's start direction is not as requested.

```
public static final ViolatedOption CARPOOL
```

The route uses CARPOOL streets even though it is disabled in the options

```
public static final ViolatedOption TIME_RESTRICTED_TURN
```

The route uses a time-restricted turn

Method Details

```
public static ViolatedOption valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RouteResult.ViolatedOption[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

RouteTta

The class `RouteTta` is a member of `com.here.android.mpa.routing`.

Class Summary

```
public final class RouteTta
```

```
extends java.lang.Object
```

Describes Time To Arrival details for a given route.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 159: Nested Classes in RouteTta

Nested Classes
<pre>public static final enumeration RouteTta.Detail</pre> <p>Additional Time To Arrival Details</p>

Method Summary

Table 160: Methods in RouteTta

Methods
<pre>public java.util.EnumSet <Detail> getDetails ()</pre> <p>Details of the blockage (if any).</p>
<pre>public int getDuration ()</pre> <p>Gets the duration in seconds.</p>
<pre>public boolean isBlocked ()</pre> <p>Whether this time to arrival is blocked.</p>
<pre>public boolean isValid ()</pre>

Class Details

Describes Time To Arrival details for a given route.

Method Details

```
public java.util.EnumSet <Detail> getDetails ()
```

Details of the blockage (if any).

Returns:

The set of all blockage details.

```
public int getDuration ()
```

Gets the duration in seconds.

Returns:

The duration in seconds.

```
public boolean isBlocked ()
```

Whether this time to arrival is blocked. Note that it is possible to get a valid duration when the route is blocked. See [getDetails\(\)](#) for more information.

Returns:

Whether this time to arrival is blocked.

```
public boolean isValid ()
```

Detail

The enumeration *Detail* is a member of *com.here.android.mpa.routing.RouteTta*.

Enumeration Summary

```
public static final enumeration RouteTta.Detail
```

```
extends java.lang.Enum, java.lang.Object
```

Additional Time To Arrival Details

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 161: Enum Constants in Detail

Fields
<pre>public static final Detail BLOCKED_ROAD</pre> <p>A blocked road is present.</p>
<pre>public static final Detail CARPOOL</pre> <p>A carpool restricted lane is present.</p>
<pre>public static final Detail RESTRICTED_TURN</pre> <p>A restricted turn is present.</p>

Method Summary

Table 162: Methods in Detail

Methods
<pre>public static Detail valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static RouteTta.Detail[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Additional Time To Arrival Details

Enum Constant Details

```
public static final Detail BLOCKED_ROAD
```

A blocked road is present.

```
public static final Detail CARPOOL
```

A carpool restricted lane is present.

```
public static final Detail RESTRICTED_TURN
```

A restricted turn is present.

Method Details

```
public static Detail valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static RouteTta.Detail[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Signpost

The class *Signpost* is a member of [com.here.android.mpa.routing](#).

Class Summary

public final class **Signpost**

extends java.lang.Object

This class stores signpost information along the [Route](#).

[For complete information, see the section [Class Details](#)]

See also:

[Maneuver](#)

Method Summary

Table 163: Methods in Signpost

Methods
public String getExitText () Returns the exit text on the <i>Signpost</i>

Class Details

This class stores signpost information along the [Route](#).

See also:

[Maneuver](#)

Method Details

public String **getExitText ()**

Returns the exit text on the *Signpost*

Returns:

exit text

search

The package *search* is a member of [com.here.android.mpa](#).

Package Summary

search

The search package provides classes for performing places and geocoder searches.

Package Details

The search package provides classes for performing places and geocoder searches.

To use the HERE Places feature, your application must include the google-gson library (release 2.2.4 or a compatible version) on its class path. This library can be downloaded from the google-gson project website at <https://github.com/google/gson>. Attempting to use the Places feature without adding this library causes runtime errors

- `com.here.android.mpa.search.RequestCreator.Places` provides methods to create new requests to search and explore places near a given position.
- `com.here.android.mpa.search.RequestCreator.Geocoder` provides methods to create new requests to perform address and reverse geocode searches.

The typical steps when perform a search are:

- Implement the `ResultListener` interface to handle the completion of the search
- Create a request using `RequestCreator.Places` or `RequestCreator.Geocoder`
- Start the search by invoking `execute(ResultListener)`
- When the search completes, the data returned in the `ResultListener.onCompleted()` callback is triggered

For more details on performing searches, please consult the "Places" section in the HERE SDK for Android Developer's Guide.

Address

The class `Address` is a member of [com.here.android.mpa.search](#).

Class Summary

public class `Address`

extends java.lang.Object

Provides textual address information for a [Location](#).

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 164: Constructors in Address

Constructors
<code>Address ()</code>
Default constructor.

Constructors

`Address (Address other)`

Copy constructor.

Method Summary

Table 165: Methods in Address

Methods
<pre>public void addAdditionalData (String key, String value)</pre> <p>Adds additional address data, one key-value pair per call.</p>
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see <code>java.lang.Object</code></p>
<pre>public Map getAdditionalData ()</pre> <p>Gets additional address data.</p>
<pre>public String getCity ()</pre> <p>Gets the current city name for the Address .</p>
<pre>public String getCountryCode ()</pre> <p>Gets the current ISO 3166-1 (3-letter) country code for the Address .</p>
<pre>public String getCountryName ()</pre> <p>Gets the current country name for the Address .</p>
<pre>public String getCounty ()</pre> <p>Gets the current county name for the Address .</p>
<pre>public String getDistrict ()</pre> <p>Gets the current district name for the Address .</p>
<pre>public String getFloorNumber ()</pre> <p>Gets the current floor number (in a multi-story building) for the Address .</p>
<pre>public String getHouseNumber ()</pre> <p>Gets the current house number for the Address .</p>
<pre>public String getPostalCode ()</pre> <p>Gets the current postal code for the Address .</p>
<pre>public String getState ()</pre> <p>Gets the current state name for the Address .</p>
<pre>public String getStateCode ()</pre> <p>Gets the current state code (state abbreviation) for the Address .</p>
<pre>public String getStreet ()</pre> <p>Gets the current street name for the Address .</p>

Methods

```
public String getSuiteNumberOrName ()
```

Gets the current suite number or suite name for the Address .

```
public String getText ()
```

Gets the current text for the Address .

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

```
public Address setCity (String city)
```

Sets a city name for the Address .

```
public Address setCountryCode (String countryCode)
```

Sets an ISO 3166-1 (3-letter) country code for the Address .

```
public Address setCountryName (String countryName)
```

Sets a country name for the Address .

```
public Address setCounty (String county)
```

Sets a county name for the Address .

```
public Address setDistrict (String district)
```

Sets a district name for the Address .

```
public Address setFloorNumber (String floorNumber)
```

Sets a floor number (in a multi-story building) for the Address .

```
public Address setHouseNumber (String houseNumber)
```

Sets a house number for the Address .

```
public Address setPostalCode (String postalCode)
```

Sets a postal code for the Address .

```
public Address setState (String state)
```

Sets a state name for the Address .

```
public Address setStateCode (String state)
```

Sets a state code (abbreviation) for the Address .

```
public Address setStreet (String street)
```

Sets a street name for the Address .

```
public Address setSuiteNumberOrName (String suiteNumberOrName)
```

Sets a suite number or suite name for the Address .

```
public Address setText (String text)
```

Sets text for the Address .

```
public String toString ()
```

For documentation, see `java.lang.Object`

Class Details

Provides textual address information for a [Location](#). The information is divided among fields such as country, street, etc.

Constructor Details

`Address ()`

Default constructor.

`Address (Address other)`

Copy constructor.

Parameters:

- `other`

The other `Address` to copy.

Method Details

`public void addAdditionalData (String key, String value)`

Adds additional address data, one key-value pair per call.

Parameters:

- `key`
The key for additional data (key-value pair).
- `value`
The value for additional data (key-value pair).

`public boolean equals (Object obj)`

For documentation, see `java.lang.Object`

Parameters:

- `obj`

`public Map getAdditionalData ()`

Gets additional address data.

Returns:

The `java.util.Map` of the additional data in key-value notation.

```
public String getCity ()
```

Gets the current city name for the Address .

Returns:

The current city name (could be empty)

```
public String getCountryCode ()
```

Gets the current ISO 3166-1(3-letter) country code for the Address .

Returns:

The current country code (could be empty)

```
public String getCountryName ()
```

Gets the current country name for the Address .

Returns:

The current country name (could be empty)

```
public String getCounty ()
```

Gets the current county name for the Address .

Returns:

The current county name (could be empty)

```
public String getDistrict ()
```

Gets the current district name for the Address .

Returns:

The current district name (could be empty)

```
public String getFloorNumber ()
```

Gets the current floor number (in a multi-story building) for the Address .

Returns:

The current floor number (could be empty)

```
public String getHouseNumber ()
```

Gets the current house number for the Address .

Returns:

The current house number (could be empty)

```
public String getPostalCode ()
```

Gets the current postal code for the Address .

Returns:

The current postal code (could be empty)

```
public String getState ()
```

Gets the current state name for the Address .

Returns:

The current state name or abbreviation (could be empty)

```
public String getStateCode ()
```

Gets the current state code (state abbreviation) for the Address .

Returns:

The current state name or abbreviation (could be empty)

```
public String getStreet ()
```

Gets the current street name for the Address .

Returns:

The current street name (could be empty)

```
public String getSuiteNumberOrName ()
```

Gets the current suite number or suite name for the Address .

Returns:

The current suite number or name (could be empty)

```
public String getText ()
```

Gets the current text for the Address .

Returns:

The current text (could be empty)

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

```
public Address setCity (String city)
```

Sets a city name for the Address .

Parameters:

- **city**

Desired city name

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setCountryCode (String countryCode)
```

Sets an ISO 3166-1 (3-letter) country code for the Address .

Parameters:

- **countryCode**

Desired ISO 3166-1 country code

Throws:

- **NullPointerException**

If the argument is null.

- **IllegalArgumentException**

If the country code is not a three-letter string.

```
public Address setCountryName (String countryName)
```

Sets a country name for the Address .

Parameters:

- **countryName**

Desired country name

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setCounty (String county)
```

Sets a county name for the Address .

Parameters:

- **county**

Desired county name

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setDistrict (String district)
```

Sets a district name for the Address .

Parameters:

- **district**

Desired district name

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setFloorNumber (String floorNumber)
```

Sets a floor number (in a multi-story building) for the Address .

Parameters:

- **floorNumber**

Desired floor number

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setHouseNumber (String houseNumber)
```

Sets a house number for the Address .

Parameters:

- **houseNumber**

Desired house number

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setPostalCode (String postalCode)
```

Sets a postal code for the Address .

Parameters:

- **postalCode**

Desired postal code

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setState (String state)
```

Sets a state name for the Address .

Parameters:

- **state**

Desired state name

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setStateCode (String state)
```

Sets a state code (abbreviation) for the Address .

Parameters:

- **state**

Desired state name or abbreviation

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setStreet (String street)
```

Sets a street name for the Address .

Parameters:

- **street**

Desired street name

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setSuiteNumberOrName (String suiteNumberOrName)
```

Sets a suite number or suite name for the Address .

Parameters:

- **suiteNumberOrName**

Desired suite number or name

Throws:

- **NullPointerException**

If the argument is null.

```
public Address setText (String text)
```

Sets text for the Address .

Parameters:

- **text**

Desired text for the address

Throws:

- **NullPointerException**

If the argument is null.

```
public String toString ()
```

For documentation, see *java.lang.Object*

AutoSuggest

The class *AutoSuggest* is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public abstract class AutoSuggest
```

```
extends java.lang.Object
```

Represents the base class for suggested places and searches.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 166: Nested Classes in AutoSuggest

Nested Classes
<pre>public static final enumeration AutoSuggest.Type</pre> <p>Represents values describing supported <i>AutoSuggest</i> types for a text suggestion.</p>

Method Summary

Table 167: Methods in AutoSuggest

Methods
<pre>public boolean equals (Object o)</pre>
<pre>public String getHighlightedTitle ()</pre> <p>Gets the display title for this place, with HTML markup highlighting the parts of the string that were matched.</p>
<pre>public String getTitle ()</pre> <p>Gets the display title for this place.</p>
<pre>public Type getType ()</pre> <p>Gets the specialized AutoSuggest type.</p>
<pre>public String getUrl ()</pre> <p>Gets the String representation of the URI that refers to the resource with details for the suggested place, URI to the suggested search or URI to the suggested completion of query term, depending on the AutoSuggest type.</p>
<pre>public int hashCode ()</pre>

Class Details

Represents the base class for suggested places and searches.

The following specialized types might be available:

- AutoSuggestPlace
- AutoSuggestSearch
- AutoSuggestQuery

Method Details

`public boolean equals (Object o)`

Parameters:

- `o`

```
public String getHighlightedTitle ()
```

Gets the display title for this place, with HTML markup highlighting the parts of the string that were matched. For example, if the user performs an AutoSuggest search with "Rest", the API will return the following:

- title:Joey Restaurant
- highlightedTitle:Joey **Restaurant**

Returns:

The highlightedTitle

```
public String getTitle ()
```

Gets the display title for this place.

Returns:

The title

```
public Type getType ()
```

Gets the specialized AutoSuggest type.

Returns:

The type

```
public String getUrl ()
```

Gets the String representation of the URI that refers to the resource with details for the suggested place, URI to the suggested search or URI to the suggested completion of query term, depending on the AutoSuggest type.

Returns:

The URL

```
public int hashCode ()
```

Type

The enumeration *Type* is a member of *com.here.android.mpa.search.AutoSuggest*.

Enumeration Summary

```
public static final enumeration AutoSuggest.Type
```

```
extends java.lang.Enum, java.lang.Object
```

Represents values describing supported *AutoSuggest* types for a text suggestion.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 168: Enum Constants in Type

Fields
<pre>public static final Type UNKNOWN</pre>
Unknown type.
<pre>public static final Type PLACE</pre>
Suggested Place.
<pre>public static final Type SEARCH</pre>
Suggested Search.
<pre>public static final Type QUERY</pre>
Suggested query

Method Summary

Table 169: Methods in Type

Methods
<pre>public static Type valueOf (String name)</pre>
This method retrieves the enumeration value that matches the name specified by the caller.
<pre>public static AutoSuggest.Type[] values ()</pre>
This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values describing supported *AutoSuggest* types for a text suggestion.

Enum Constant Details

`public static final Type UNKNOWN`

Unknown type.

`public static final Type PLACE`

Suggested Place.

`public static final Type SEARCH`

Suggested Search.

```
public static final Type QUERY
```

Suggested query

Method Details

```
public static Type valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static AutoSuggest.Type[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

AutoSuggestPlace

The class *AutoSuggestPlace* is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class AutoSuggestPlace
```

```
extends com.here.android.mpa.search.AutoSuggest, java.lang.Object
```

Represents an *AutoSuggestPlace* which contains information about a suggested Place.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 170: Methods in AutoSuggestPlace

Methods
<pre>public GeoBoundingBox getBoundingBox ()</pre>
Gets the GeoBoundingBox describing a range of coordinates that correspond to the Place.
<pre>public String getCategory ()</pre>
Gets the category for the Place.
<pre>public String getHighlightedVicinity ()</pre>

Methods

```
public String getId ()  
  
public PlaceRequest getPlaceDetailsRequest ()  
Gets the request to retrieve the Place details.  
  
public GeoCoordinate getPosition ()  
Gets the GeoCoordinate representing the geographical position of the Place.  
  
public String getVicinity ()  
Gets the String description for the vicinity of the Place.  
  
public String toString ()
```

Class Details

Represents an *AutoSuggestPlace* which contains information about a suggested *Place*.

Note: detailed *Place* information is retrieved by way of the *PlaceRequest* returned from a call to the *getPlaceDetailsRequest()* method.

Method Details

```
public GeoBoundingBox getBoundingBox ()
```

Gets the GeoBoundingBox describing a range of coordinates that correspond to the *Place*. Typically, bounding boxes are associated with places such as cities and countries.

Note: bounding box information for a *Place* is optional, so a call to this method could return null.

Returns:

The GeoBoundingBox containing the *Place* (could be null)

```
public String getCategory ()
```

Gets the category for the *Place*.

Returns:

The Category

```
public String getHighlightedVicinity ()
```

```
public String getId ()
```

```
public PlaceRequest getPlaceDetailsRequest ()
```

Gets the request to retrieve the *Place* details.

Returns:

The [PlaceRequest](#) to retrieve the [Place](#) details

```
public GeoCoordinate getPosition ()
```

Gets the GeoCoordinate representing the geographical position of the [Place](#).

Returns:

The GeoCoordinate

```
public String getVicinity ()
```

Gets the String description for the vicinity of the [Place](#). Typically, this description is derived from the [Address](#), but could also contain any other description that helps a user understand where the [Place](#) is located.

Returns:

The vicinity description

```
public String toString ()
```

AutoSuggestQuery

The class [AutoSuggestQuery](#) is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class AutoSuggestQuery
```

extends com.here.android.mpa.search.AutoSuggest, java.lang.Object

Represents an [AutoSuggest](#) with suggested completion

[For complete information, see the section [Class Details](#)]

Method Summary

Table 171: Methods in [AutoSuggestQuery](#)

Methods
<pre>public String getQueryCompletion ()</pre>
<pre>public TextAutoSuggestionRequest getRequest ()</pre>
Gets the request to perform a auto suggested search.
<pre>public String toString ()</pre>

Class Details

Represents an [AutoSuggest](#) with suggested completion

Note: List of [AutoSuggest](#) can be retrieved by call to the [getRequest\(\)](#) method.

Method Details

`public String getQueryCompletion ()`

Returns:

suggested query completion

`public TextAutoSuggestionRequest getRequest ()`

Gets the request to perform a auto suggested search.

Returns:

The [TextAutoSuggestionRequest](#) to retrieve the [AutoSuggest](#)

`public String toString ()`

AutoSuggestSearch

The class [AutoSuggestSearch](#) is a member of [com.here.android.mpa.search](#).

Class Summary

`public class AutoSuggestSearch`

`extends com.here.android.mpa.search.AutoSuggest, java.lang.Object`

Represents an [AutoSuggestSearch](#) which contains information about a refined search link.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 172: Methods in AutoSuggestSearch

Methods
<code>public GeoBoundingBox getBoundingBox ()</code> Gets the GeoBoundingBox describing a range of coordinates that correspond to the Place .
<code>public String getCategory ()</code> Gets the category for the suggested search.
<code>public GeoCoordinate getPosition ()</code>

Methods

Gets the *GeoCoordinate* representing the geographical position of the suggested search.

```
public DiscoveryRequest getSuggestedSearchRequest ()
```

Gets the request to perform a suggested search.

```
public String toString ()
```

Class Details

Represents an *AutoSuggestSearch* which contains information about a refined search link.

Note: *DiscoveryResultPage* is retrieved by way of the *DiscoveryRequest* returned from a call to the *getSuggestedSearchRequest()* method.

Method Details

```
public GeoBoundingBox getBoundingBox ()
```

Gets the *GeoBoundingBox* describing a range of coordinates that correspond to the *Place*. Typically, bounding boxes are associated with places such as cities and countries.

Note: bounding box information for a suggested search is optional, so a call to this method could return null .

Returns:

The GeoBoundingBox

```
public String getCategory ()
```

Gets the category for the suggested search.

Note: category information for a suggested search is optional, so a call to this method could return null .

Returns:

The Category

```
public GeoCoordinate getPosition ()
```

Gets the *GeoCoordinate* representing the geographical position of the suggested search.

Note: position information for a suggested search is optional, so a call to this method could return null .

Returns:

The GeoCoordinate

```
public DiscoveryRequest getSuggestedSearchRequest ()
```

Gets the request to perform a suggested search.

Returns:

The [DiscoveryRequest](#) to retrieve the [DiscoveryResultPage](#)

```
public String toString ()
```

Category

The class [Category](#) is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class Category
```

```
extends java.lang.Object
```

Represents a category with which a [Place](#) can be associated.

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 173: Nested Classes in Category

Nested Classes
<pre>public static final enumeration Category.Global</pre> <p>Represents a set of fixed category filters on the resources of the Places search service.</p>

Method Summary

Table 174: Methods in Category

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public String getIconUrl ()</pre> <p>Gets the URL to retrieve the icon for the Category.</p>
<pre>public String getId ()</pre> <p>Gets the unique identifier for the Category.</p>
<pre>public String getName ()</pre> <p>Gets the localized display name for the Category.</p>
<pre>public Category getParent ()</pre> <p>Gets the parent Category for the Category.</p>

Methods

```
public java.util.List <Category> getSubCategories ()
```

Gets the list of subcategories for the Category .

```
public static java.util.List <Category> globalCategories ()
```

Return the localized Global categories for Places search.

```
public static Category globalCategory (Global type)
```

Return the localized Global category for Places search.

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

Class Details

Represents a category with which a *Place* can be associated.

Method Details

```
public boolean equals (Object obj)
```

For documentation, see *java.lang.Object*

Parameters:

- **obj**

```
public String getIconUrl ()
```

Gets the URL to retrieve the icon for the Category .

Returns:

The icon URL

```
public String getId ()
```

Gets the unique identifier for the Category .

Returns:

The unique ID

```
public String getName ()
```

Gets the localized display name for the Category .

Returns:

Localized display name

```
public Category getParent ()
```

Gets the parent Category for the Category .

Note: The category can already be a parent Category , in which case this method would return itself.

Returns:

Parent Category

```
public java.util.List <Category> getSubCategories ()
```

Gets the list of subcategories for the Category .

Note: a Category might have no subcategories, in which case this method would return empty .

Returns:

The list of Category objects representing the subcategories (could be empty)

```
public static java.util.List <Category> globalCategories ()
```

Return the localized Global categories for Places search. Note: The list of categories is cached. The update request to Places backend is made periodically and when device locale is changed. If there is no cache or cache is being updated, an empty list is returned. User should try again later.

Returns:

A list of localized global Category instances if available, empty otherwise.

```
public static Category globalCategory (Global type)
```

Return the localized Global category for Places search. Note: The list of categories is cached. The update request to Places backend is made periodically and when device locale is changed. If there is no cache or cache is being updated, an empty list is returned. User should try again later.

Parameters:

- **type**

The Global type.

Returns:

The localized Global Category instances.

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

Global

The enumeration `Global` is a member of `com.here.android.mpa.search.Category`.

Enumeration Summary

public static final enumeration `Category.Global`

extends java.lang.Enum, java.lang.Object

Represents a set of fixed category filters on the resources of the Places search service.

[For complete information, see the section [Enumeration Details](#)]

See also:

[add\(Global\)](#)

Enum Constant Summary

Table 175: Enum Constants in Global

Fields
<pre>public static final Global ACCOMMODATION</pre> <p>The accommodation category.</p>
<pre>public static final Global ADMINISTRATIVE AREAS BUILDINGS</pre> <p>The administrative-areas-buildings category.</p>
<pre>public static final Global BUSINESS SERVICES</pre> <p>The business-services category.</p>
<pre>public static final Global EAT DRINK</pre> <p>The eat-drink category.</p>
<pre>public static final Global FACILITIES</pre> <p>The facilities category.</p>
<pre>public static final Global GOING OUT</pre> <p>The going-out category.</p>
<pre>public static final Global LEISURE OUTDOOR</pre> <p>The leisure-outdoor category.</p>
<pre>public static final Global NATURAL GEOGRAPHICAL</pre> <p>The natural-geographical category.</p>
<pre>public static final Global SHOPPING</pre> <p>The shopping category.</p>
<pre>public static final Global SIGHTS MUSEUMS</pre> <p>The sights-museums category.</p>

Fields

```
public static final Global TRANSPORT
```

The transport category.

Method Summary

Table 176: Methods in Global

Methods
<pre>public String toString ()</pre> <p>Returns a stringified Category.</p>
<pre>public static Global valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static Category.Global[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents a set of fixed category filters on the resources of the Places search service.

See also:

[add\(Global\)](#)

Enum Constant Details

```
public static final Global ACCOMMODATION
```

The accommodation category.

```
public static final Global ADMINISTRATIVE_AREAS_BUILDINGS
```

The administrative-areas-buildings category.

```
public static final Global BUSINESS_SERVICES
```

The business-services category.

```
public static final Global EAT_DRINK
```

The eat-drink category.

```
public static final Global FACILITIES
```

The facilities category.

```
public static final Global GOING_OUT
```

The going-out category.

```
public static final Global LEISURE_OUTDOOR
```

The leisure-outdoor category.

```
public static final Global NATURAL_GEOGRAPHICAL
```

The natural-geographical category.

```
public static final Global SHOPPING
```

The shopping category.

```
public static final Global SIGHTS_MUSEUMS
```

The sights-museums category.

```
public static final Global TRANSPORT
```

The transport category.

Method Details

```
public String toString ()
```

Returns a stringified Category.

Returns:

The stringified Category

```
public static Global valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Category.Global[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

CategoryFilter

The class *CategoryFilter* is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class CategoryFilter
```

```
extends java.lang.Object
```

Represents a filter used when performing a search for popular places within a specific geographic area.

[For complete information, see the section [Class Details](#)]

See also:

[Category](#)

[Category.Global](#)

Constructor Summary

Table 177: Constructors in CategoryFilter

Constructors
<code>CategoryFilter ()</code> Default constructor.

Method Summary

Table 178: Methods in CategoryFilter

Methods
<code>public CategoryFilter add (Global filter)</code> Adds a Category.Global to the CategoryFilter.
<code>public CategoryFilter add (Category filter)</code> Adds a Category (retrieved from the results of a previous request) to the CategoryFilter.
<code>public CategoryFilter add (String filter)</code> Adds a known category to the CategoryFilter as a String.
<code>public boolean equals (Object obj)</code> For documentation, see java.lang.Object

Methods

```
public int hashCode ()
```

For documentation, see [java.lang.Object](#)

```
public String toString ()
```

Returns a stringified CategoryFilter, within which individual categories are separated by commas.

Class Details

Represents a filter used when performing a search for popular places within a specific geographic area. (This type of search is otherwise known as "explore".) The filter limits search results to the specified categories.

A filter can include one or more of:

- A Category
- A Category.Global
- A String indicating a known category

See also:

[Category](#)

[Category.Global](#)

Constructor Details

CategoryFilter ()

Default constructor.

Method Details

```
public CategoryFilter add (Global filter)
```

Adds a Category.Global to the CategoryFilter.

Parameters:

- **filter**

A Category.Global filter

```
public CategoryFilter add (Category filter)
```

Adds a Category (retrieved from the results of a previous request) to the CategoryFilter.

Parameters:

- **filter**

A Category filter

```
public CategoryFilter add (String filter)
```

Adds a known category to the CategoryFilter as a String .

Parameters:

- **filter**

A String filter

```
public boolean equals (Object obj)
```

For documentation, see *java.lang.Object*

Parameters:

- **obj**

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

```
public String toString ()
```

Returns a stringified CategoryFilter , within which individual categories are separated by commas.

Returns:

The stringified CategoryFilter

ContactDetail

The class *ContactDetail* is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class ContactDetail
```

```
extends java.lang.Object
```

Represents detailed information about a contact for a *Place*.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 179: Methods in ContactDetail

Methods
<pre>public boolean equals (Object obj)</pre>

Methods

For documentation, see [java.lang.Object](#)

```
public String getLabel ()
```

Gets the localized label for the `ContactDetail`, describing the mechanism by which application users can contact the `Place` (e.g.

```
public String getType ()
```

Gets the type (email, fax, phone, website, etc.) for the `ContactDetail`.

```
public String getValue ()
```

Gets the value corresponding to an associated contact mechanism label for the `ContactDetail`.

```
public int hashCode ()
```

For documentation, see [java.lang.Object](#)

Class Details

Represents detailed information about a contact for a `Place`.

For example, if a `Place` has among its known contacts the phone number 555-1234, use this class to access details about that particular contact's type ("phone") and value ("555-1234").

Method Details

```
public boolean equals (Object obj)
```

For documentation, see [java.lang.Object](#)

Parameters:

- `obj`

```
public String getLabel ()
```

Gets the localized label for the `ContactDetail`, describing the mechanism by which application users can contact the `Place` (e.g. "Phone").

Returns:

The label

See also:

[getValue\(\)](#)

```
public String getType ()
```

Gets the type (email, fax, phone, website, etc.) for the `ContactDetail`.

Returns:

The type

```
public String getValue ()
```

Gets the value corresponding to an associated contact mechanism label for the ContactDetail .

For example, if the mechanism for contacting a *Place* is "phone" then a call to this method might return "555-1234" as the corresponding value.

Returns:

The value

See also:

[getLabel\(\)](#)

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

DiscoveryLink

The class *DiscoveryLink* is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class DiscoveryLink
```

extends com.here.android.mpa.search.DiscoveryResult, com.here.android.mpa.search.Link, java.lang.Object

Represents a discovery-related API link, used to retrieve a *DiscoveryResultPage* .

[For complete information, see the section [Class Details](#)]

Method Summary

Table 180: Methods in *DiscoveryLink*

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see <i>java.lang.Object</i></p>
<pre>public String getIconUrl ()</pre> <p>Gets the URL to retrieve the icon for the resource to which the <i>Link</i> refers.</p>
<pre>public String getId ()</pre> <p>Gets the unique identifier for the resource to which the <i>Link</i> refers.</p>
<pre>public DiscoveryRequest getRequest ()</pre> <p>Gets the <i>DiscoveryRequest</i> to perform the next discovery search.</p>

Methods

```
public String getTitle ()
```

Gets the localized title for the resource to which the `Link` refers.

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

Class Details

Represents a discovery-related API link, used to retrieve a `DiscoveryResultPage`.

Method Details

```
public boolean equals (Object obj)
```

For documentation, see `java.lang.Object`

Parameters:

- `obj`

```
public String getIconUrl ()
```

Gets the URL to retrieve the icon for the resource to which the `Link` refers.

Note: an icon URL for a linked object is optional, so a call to this method could return `empty`.

Returns:

The icon URL (could be `empty`)

```
public String getId ()
```

Gets the unique identifier for the resource to which the `Link` refers.

Note: an ID for a linked object is optional, so a call to this method could return `empty`.

Returns:

The ID (could be `empty`)

```
public DiscoveryRequest getRequest ()
```

Gets the `DiscoveryRequest` to perform the next discovery search.

Returns:

The `DiscoveryRequest`

```
public String getTitle ()
```

Gets the localized title for the resource to which the `Link` refers. Client devices can display this title within an application.

Note: a title for a linked object is optional, so a call to this method could return `empty`.

Returns:

The title (could be `empty`)

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

DiscoveryRequest

The class `DiscoveryRequest` is a member of `com.here.android.mpa.search`.

Class Summary

```
public class DiscoveryRequest  
extends com.here.android.mpa.search.Request, java.lang.Object
```

Represents an extended Request used to retrieve a `DiscoveryResultPage` object by way of Places search services.

[For complete information, see the section [Class Details](#)]

See also:

[ExploreRequest](#)

[HereRequest](#)

[SearchRequest](#)

Method Summary

Table 181: Methods in `DiscoveryRequest`

Methods
<pre>public DiscoveryRequest addBuildingFilter (String buildingId)</pre>
<pre>public void addImageDimensions (int width, int height)</pre> <p>Request Image Media with specific dimensions.</p>
<pre>public DiscoveryRequest addReference (String name)</pre> <p>This function adds the name of a requested reference identifiers to be returned in the results.</p>
<pre>public ErrorCode execute (ResultListener<DiscoveryResultPage> eventListener)</pre> <p>Executes an asynchronous request.</p>

Methods

```
public int getCollectionSize ()
```

Gets the current collection size being used for request responses.

```
public List getReferences ()
```

This function returns the names of requested reference identifiers to be returned in the results.

```
public RichTextFormatting getRichTextFormatting ()
```

Gets the current RichTextFormatting type being used in request responses.

```
protected DiscoveryRequest setCategoryFilter (CategoryFilter filter)
```

```
public DiscoveryRequest setCollectionSize (int value)
```

Sets a collection size to be used for request responses.

```
public DiscoveryRequest setMapViewport (GeoBoundingBox mapViewport)
```

The map viewport is a bounding box of the map area currently visible to the user.

```
public DiscoveryRequest setRichTextFormatting (RichTextFormatting value)
```

Sets a RichTextFormatting to be used in request responses.

```
protected DiscoveryRequest setSearchArea (GeoCoordinate coordinate, int radius)
```

```
protected DiscoveryRequest setSearchArea (GeoBoundingBox area)
```

```
protected DiscoveryRequest setSearchCenter (GeoCoordinate coordinate)
```

Class Details

Represents an extended Request used to retrieve a DiscoveryResultPage object by way of Places search services.

See also:

[ExploreRequest](#)

[HereRequest](#)

[SearchRequest](#)

Method Details

```
public DiscoveryRequest addBuildingFilter (String buildingId)
```

Parameters:

- **buildingId**

```
public void addImageDimensions (int width, int height)
```

Request Image Media with specific dimensions. At least one of the sizes (width or height) needs to be valid (greater than 0).

Parameters:

- **width**
Image width (pass 0 for any width)
- **height**
Image height (pass 0 for any height)

```
public DiscoveryRequest addReference (String name)
```

This function adds the name of a requested reference identifiers to be returned in the results. For example, to retrieve an extruded building identifier, set this value to `BUILDING_ID_REFERENCE_NAME`.

Parameters:

- **name**
Name of reference identifier to retrieve.

Returns:

True if name added, false otherwise.

```
public ErrorCode execute (ResultListener<DiscoveryResultPage>  
eventListener)
```

Executes an asynchronous request.

Parameters:

- **eventListener**
A `ResultListener` passed along with the request to monitor progress

Returns:

The `ErrorCode` representing an appropriate result

```
public int getCollectionSize ()
```

Gets the current collection size being used for request responses.

Returns:

The current response collection size

```
public List getReferences ()
```

This function returns the names of requested reference identifiers to be returned in the results.

Returns:

List of the names of reference identifiers to be returned in the result.



```
public RichTextFormatting getRichTextFormatting ()
```

Gets the current RichTextFormatting type being used in request responses.

Returns:

The current RichTextFormatting type

```
protected DiscoveryRequest setCategoryFilter (CategoryFilter filter)
```

Parameters:

- **filter**

```
public DiscoveryRequest setCollectionSize (int value)
```

Sets a collection size to be used for request responses. The maximum number of result items in each collection will be limited to this value. The valid value range is [1..100]. The default collection size is 20.

Parameters:

- **value**

Desired response collection size per request.

Returns:

This DiscoveryRequest object

```
public DiscoveryRequest setMapViewport (GeoBoundingBox mapViewport)
```

The map viewport is a bounding box of the map area currently visible to the user. The viewport can act as an implicit location context in the absence of an explicit location context. To ensure you get the best results possible, you should always set a viewport if there is a map visible to the user.

Parameters:

- **mapViewport**

The bounding box of the map area currently visible.

```
public DiscoveryRequest setRichTextFormatting (RichTextFormatting value)
```

Sets a RichTextFormatting to be used in request responses. The default formatting is [HTML](#).

Parameters:

- **value**

Desired RichTextFormatting

Returns:

This DiscoveryRequest object

```
protected DiscoveryRequest setSearchArea (GeoCoordinate coordinate, int radius)
```

Parameters:

- **coordinate**
- **radius**

```
protected DiscoveryRequest setSearchArea (GeoBoundingBox area)
```

Parameters:

- **area**

```
protected DiscoveryRequest setSearchCenter (GeoCoordinate coordinate)
```

Parameters:

- **coordinate**

DiscoveryResult

The class *DiscoveryResult* is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class DiscoveryResult  
extends com.here.android.mpa.search.Link, java.lang.Object
```

Represents a base class for a *DiscoveryResult* found in a *DiscoveryResultPage*.

[For complete information, see the section [Class Details](#)]

See also:

[DiscoveryLink](#)

[PlaceLink](#)

Nested Class Summary

Table 182: Nested Classes in *DiscoveryResult*

Nested Classes
<pre>public static final enumeration DiscoveryResult.ResultType Represents values describing possible DiscoveryResult types.</pre>

Method Summary

Table 183: Methods in *DiscoveryResult*

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public String getIconUrl ()</pre> <p>Gets the URL to retrieve the icon for the resource to which the <code>Link</code> refers.</p>
<pre>public String getId ()</pre> <p>Gets the unique identifier for the resource to which the <code>Link</code> refers.</p>
<pre>public ResultType getResultType ()</pre> <p>Gets the <code>ResultType</code> for the <code>DiscoveryResult</code>.</p>
<pre>public String getTitle ()</pre> <p>Gets the localized title for the resource to which the <code>Link</code> refers.</p>
<pre>public String getVicinity ()</pre> <p>Gets the <code>String</code> description for the vicinity of the <code>Place</code>.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see java.lang.Object</p>

Class Details

Represents a base class for a `DiscoveryResult` found in a `DiscoveryResultPage`.

See also:

[DiscoveryLink](#)

[PlaceLink](#)

Method Details

`public boolean equals (Object obj)`

For documentation, see [java.lang.Object](#)

Parameters:

- `obj`

`public String getIconUrl ()`

Gets the URL to retrieve the icon for the resource to which the `Link` refers.

Note: an icon URL for a linked object is optional, so a call to this method could return `empty`.

Returns:



The icon URL (could be empty)

```
public String getId ()
```

Gets the unique identifier for the resource to which the Link refers.

Note: an ID for a linked object is optional, so a call to this method could return empty .

Returns:

The ID (could be empty)

```
public ResultType getResultType ()
```

Gets the ResultType for the DiscoveryResult .

Returns:

The ResultType

```
public String getTitle ()
```

Gets the localized title for the resource to which the Link refers. Client devices can display this title within an application.

Note: a title for a linked object is optional, so a call to this method could return empty .

Returns:

The title (could be empty)

```
public String getVicinity ()
```

Gets the String description for the vicinity of the *Place*. Typically, this description is derived from the *Address*, but could also contain any other description that helps a user understand where the Place is located.

Returns:

The vicinity description (could be empty)

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

ResultType

The enumeration *ResultType* is a member of *com.here.android.mpa.search.DiscoveryResult*.

Enumeration Summary

public static final enumeration **DiscoveryResult.ResultType**

extends java.lang.Enum, java.lang.Object

Represents values describing possible *DiscoveryResult* types.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 184: Enum Constants in *ResultType*

Fields
<pre>public static final ResultType UNKNOWN</pre> <p>The result type is unknown.</p>
<pre>public static final ResultType PLACE</pre> <p>The <i>DiscoveryResult</i> represents a <i>PlaceLink</i>.</p>
<pre>public static final ResultType DISCOVERY</pre> <p>The <i>DiscoveryResult</i> represents a <i>DiscoveryLink</i>.</p>

Method Summary

Table 185: Methods in *ResultType*

Methods
<pre>public static ResultType valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static DiscoveryResult.ResultType[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing possible *DiscoveryResult* types.

Enum Constant Details

`public static final ResultType UNKNOWN`

The result type is unknown. The *DiscoveryResult* does not represent a specialized result.

`public static final ResultType PLACE`

The *DiscoveryResult* represents a *PlaceLink*.

```
public static final ResultType DISCOVERY
```

The DiscoveryResult represents a *DiscoveryLink*.

Method Details

```
public static ResultType valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static DiscoveryResult.ResultType[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

DiscoveryResultPage

The class *DiscoveryResultPage* is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class DiscoveryResultPage
```

```
extends java.lang.Object
```

Represents a paginated collection of results from a request.

[For complete information, see the section [Class Details](#)]

See also:

[ExploreRequest](#)

[HereRequest](#)

[SearchRequest](#)

Method Summary

Table 186: Methods in *DiscoveryResultPage*

Methods
<pre>public boolean equals (Object obj) For documentation, see java.lang.Object</pre> <pre>public java.util.List <DiscoveryLink> getDiscoveryLinks ()</pre>

Methods

Gets the list of `DiscoveryLink` items for the `DiscoveryResultPage`.

```
public java.util.List <DiscoveryResult> getItems ()
```

Gets the list of `DiscoveryResult` items for the `DiscoveryResultPage`.

```
public DiscoveryRequest getNextPageRequest ()
```

Gets the `DiscoveryRequest` for requesting the next page of the `DiscoveryResultPage`.

```
public int getOffsetCount ()
```

Gets the result offset count for the current page of the `DiscoveryResultPage`.

```
public java.util.List <PlaceLink> getPlaceLinks ()
```

Gets the list of `PlaceLink` items for the `DiscoveryResultPage`.

```
public DiscoveryRequest getPreviousPageRequest ()
```

Gets the `DiscoveryRequest` for requesting the previous page of the `DiscoveryResultPage`.

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

Class Details

Represents a paginated collection of results from a request. The collection contains `DiscoveryResult` objects, each of which represents either a `PlaceLink` or another `DiscoveryLink`.

See also:

[ExploreRequest](#)

[HereRequest](#)

[SearchRequest](#)

Method Details

```
public boolean equals (Object obj)
```

For documentation, see `java.lang.Object`

Parameters:

- `obj`

```
public java.util.List <DiscoveryLink> getDiscoveryLinks ()
```

Gets the list of `DiscoveryLink` items for the `DiscoveryResultPage`.

Returns:

The list of `DiscoveryLink` objects (could be empty)

```
public java.util.List <DiscoveryResult> getItems ()
```



Gets the list of `DiscoveryResult` items for the `DiscoveryResultPage`.

Returns:

The list of `DiscoveryResult` objects (could be empty)

```
public DiscoveryRequest getNextPageRequest ()
```

Gets the `DiscoveryRequest` for requesting the next page of the `DiscoveryResultPage`.

Returns:

The `DiscoveryRequest`

```
public int getOffsetCount ()
```

Gets the result offset count for the current page of the `DiscoveryResultPage`.

For the first page of results, the offset count is 0. Following any call to `getNextPageRequest()`, the offset count will be greater than 0.

Returns:

The result offset count

```
public java.util.List <PlaceLink> getPlaceLinks ()
```

Gets the list of `PlaceLink` items for the `DiscoveryResultPage`.

Returns:

The list of `PlaceLink` objects (could be empty)

```
public DiscoveryRequest getPreviousPageRequest ()
```

Gets the `DiscoveryRequest` for requesting the previous page of the `DiscoveryResultPage`.

Returns:

The `DiscoveryRequest`

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

EditorialMedia

The class `EditorialMedia` is a member of `com.here.android.mpa.search`.

Class Summary

```
public class EditorialMedia  
extends com.here.android.mpa.search.Media, java.lang.Object
```

Represents editorial content about a *Place*.

[For complete information, see the section [Class Details](#)]

See also:

[getEditorials\(\)](#)

Method Summary

Table 187: Methods in EditorialMedia

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public String getDescription ()</pre> <p>Gets the String representation of the description for the editorial.</p>
<pre>public String getIsoLanguageCode ()</pre> <p>Gets the ISO language code for the editorial content.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see java.lang.Object</p>

Class Details

Represents editorial content about a *Place*.

See also:

[getEditorials\(\)](#)

Method Details

```
public boolean equals (Object obj)
```

For documentation, see [java.lang.Object](#)

Parameters:

- **obj**

```
public String getDescription ()
```

Gets the String representation of the description for the editorial.

Returns:

The description

```
public String getIsoLanguageCode ()
```

Gets the ISO language code for the editorial content.

Note: a language code for an editorial content type is optional, so a call to this method could return empty .

Returns:

The language code (could be empty)

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

ErrorCode

The enumeration *ErrorCode* is a member of [com.here.android.mpa.search](#) .

Enumeration Summary

```
public final enumeration ErrorCode
```

```
extends java.lang.Enum, java.lang.Object
```

Represents values describing possible search request errors.

[For complete information, see the section [Enumeration Details](#)]

Enum Constant Summary

Table 188: Enum Constants in ErrorCode

Fields
<pre>public static final ErrorCode NONE</pre> <p>No error was encountered.</p>
<pre>public static final ErrorCode GENERAL</pre> <p>There was a general error.</p>
<pre>public static final ErrorCode NOT_FOUND</pre> <p>No appropriate response to the query request could be found.</p>
<pre>public static final ErrorCode NOT_INITIALIZED</pre> <p>The search service was not properly initialized.</p>
<pre>public static final ErrorCode INCOMPLETE</pre> <p>The results of the query request were incomplete.</p>

Fields

```
public static final ErrorCode NETWORK_REQUIRED
```

The query request could not be completed while offline.

```
public static final ErrorCode OUT_OF_MEMORY
```

There was insufficient memory to complete the query request.

```
public static final ErrorCode UNKNOWN
```

There was an unknown error.

```
public static final ErrorCode CANCEL
```

The query request was cancelled.

```
public static final ErrorCode BUSY
```

The search service was busy with another request.

```
public static final ErrorCode INVALID_STATE
```

The search service was in an invalid state.

```
public static final ErrorCode SERVER_CONNECTION
```

There was a problem with the server connection.

```
public static final ErrorCode INVALID_OPERATION
```

The query request triggered an invalid operation.

```
public static final ErrorCode BAD_LOCATION
```

The query request contained bad location data.

```
public static final ErrorCode INDEX_FAILURE
```

There was an search service index failure.

```
public static final ErrorCode CANCELLED
```

The query request was cancelled.

```
public static final ErrorCode CREATED
```

The response to the query request was created.

```
public static final ErrorCode ACCEPTED
```

The query request was accepted, though not yet processed.

```
public static final ErrorCode NO_CONTENT
```

The response to the query request contained no content.

```
public static final ErrorCode SERVER_INTERNAL
```

There was an internal server error.

```
public static final ErrorCode SERVICE_UNAVAILABLE
```

The search service was unavailable.

```
public static final ErrorCode MOVED_PERMANENTLY
```

The requested resource has moved permanently.

```
public static final ErrorCode BAD_REQUEST
```



Fields

The query request was malformed and will not be processed.

```
public static final ErrorCode UNAUTHORIZED
```

The query request did not contain necessary authentication information.

```
public static final ErrorCode FORBIDDEN
```

Access to the requested resource was forbidden.

```
public static final ErrorCode OPERATION_NOT_ALLOWED
```

The required permission to use Offline Place Search, Offline Category Search, Offline Geocoding or Offline Reverse GeoCoding is missing.

```
public static final ErrorCode NOT_ACCEPTABLE
```

The response to the query request was not in a format that is acceptable to the client.

```
public static final ErrorCode RESOURCE_GONE
```

The resource no longer exists at the requested server location.

```
public static final ErrorCode QUERY_ADDRESS_MISSING
```

The query request was missing an address parameter.

```
public static final ErrorCode QUERY_LOCATION_CONTEXT_INVALID
```

The query location context was invalid.

```
public static final ErrorCode QUERY_LOCATION_CONTEXT_MISSING
```

The query request was missing a location context parameter.

```
public static final ErrorCode QUERY_NO_NEXT_PAGE
```

No further paginated results exist.

```
public static final ErrorCode QUERY_TEXT_MISSING
```

The query request was missing a search text parameter.

```
public static final ErrorCode QUERY_URI_MISSING
```

The query request was missing a link URI.

```
public static final ErrorCode SEARCH_RESULT_ITEM_MISSING
```

The place details query was missing a search result item parameter.

```
public static final ErrorCode INVALID_PARAMETER
```

A query request parameter was invalid.

```
public static final ErrorCode NETWORK_COMMUNICATION
```

There was a network communications error.

```
public static final ErrorCode NETWORK_BAD_URI
```

The HTTP request URI was invalid or malformed.

```
public static final ErrorCode NETWORK_SERVER
```

The backend server was unreachable.

```
public static final ErrorCode NETWORK_REQUEST_CONTENT
```

Fields

The query request content was invalid.

```
public static final ErrorCode NETWORK_EMPTY_INPUT
```

The query request input was missing.

```
public static final ErrorCode INVALID_CREDENTIALS
```

The application ID and/or token were missing or invalid.

```
public static final ErrorCode HTTP
```

The query request failed due to an HTTP error.

```
public static final ErrorCode NETWORK_UNKNOWN
```

There was an unknown network error.

Method Summary

Table 189: Methods in ErrorCode

Methods

```
public static ErrorCode valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

```
public static ErrorCode[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

Enumeration Details

Represents values describing possible search request errors.

Enum Constant Details

```
public static final ErrorCode NONE
```

No error was encountered.

```
public static final ErrorCode GENERAL
```

There was a general error.

```
public static final ErrorCode NOT_FOUND
```

No appropriate response to the query request could be found.

```
public static final ErrorCode NOT_INITIALIZED
```

The search service was not properly initialized.

```
public static final ErrorCode INCOMPLETE
```

The results of the query request were incomplete.

```
public static final ErrorCode NETWORK_REQUIRED
```

The query request could not be completed while offline.

```
public static final ErrorCode OUT_OF_MEMORY
```

There was insufficient memory to complete the query request.

```
public static final ErrorCode UNKNOWN
```

There was an unknown error.

```
public static final ErrorCode CANCEL
```

The query request was cancelled.

```
public static final ErrorCode BUSY
```

The search service was busy with another request.

```
public static final ErrorCode INVALID_STATE
```

The search service was in an invalid state.

```
public static final ErrorCode SERVER_CONNECTION
```

There was a problem with the server connection.

```
public static final ErrorCode INVALID_OPERATION
```

The query request triggered an invalid operation.

```
public static final ErrorCode BAD_LOCATION
```

The query request contained bad location data.

```
public static final ErrorCode INDEX_FAILURE
```

The search service index failure.

```
public static final ErrorCode CANCELLED
```

The query request was cancelled.

```
public static final ErrorCode CREATED
```

The response to the query request was created.

```
public static final ErrorCode ACCEPTED
```

The query request was accepted, though not yet processed.

```
public static final ErrorCode NO_CONTENT
```

The response to the query request contained no content.

```
public static final ErrorCode SERVER_INTERNAL
```

There was an internal server error.

```
public static final ErrorCode SERVICE_UNAVAILABLE
```

The search service was unavailable.

```
public static final ErrorCode MOVED_PERMANENTLY
```

The requested resource has moved permanently.

```
public static final ErrorCode BAD_REQUEST
```

The query request was malformed and will not be processed.

```
public static final ErrorCode UNAUTHORIZED
```

The query request did not contain necessary authentication information.

```
public static final ErrorCode FORBIDDEN
```

Access to the requested resource was forbidden.

```
public static final ErrorCode OPERATION_NOT_ALLOWED
```

The required permission to use Offline Place Search, Offline Category Search, Offline Geocoding or Offline Reverse GeoCoding is missing.

```
public static final ErrorCode NOT_ACCEPTABLE
```

The response to the query request was not in a format that is acceptable to the client.

```
public static final ErrorCode RESOURCE_GONE
```

The resource no longer exists at the requested server location.

```
public static final ErrorCode QUERY_ADDRESS_MISSING
```

The query request was missing an address parameter.

```
public static final ErrorCode QUERY_LOCATION_CONTEXT_INVALID
```

The query location context was invalid.

```
public static final ErrorCode QUERY_LOCATION_CONTEXT_MISSING
```

The query request was missing a location context parameter.

```
public static final ErrorCode QUERY_NO_NEXT_PAGE
```

No further paginated results exist.

```
public static final ErrorCode QUERY_TEXT_MISSING
```

The query request was missing a search text parameter.

```
public static final ErrorCode QUERY_URI_MISSING
```

The query request was missing a link URI.

```
public static final ErrorCode SEARCH_RESULT_ITEM_MISSING
```

The place details query was missing a search result item parameter.

```
public static final ErrorCode INVALID_PARAMETER
```

A query request parameter was invalid.

```
public static final ErrorCode NETWORK_COMMUNICATION
```

There was a network communications error.

```
public static final ErrorCode NETWORK_BAD_URI
```

The HTTP request URI was invalid or malformed.

```
public static final ErrorCode NETWORK_SERVER
```

The backend server was unreachable.

```
public static final ErrorCode NETWORK_REQUEST_CONTENT
```

The query request content was invalid.

```
public static final ErrorCode NETWORK_EMPTY_INPUT
```

The query request input was missing.

```
public static final ErrorCode INVALID_CREDENTIALS
```

The application ID and/or token were missing or invalid.

```
public static final ErrorCode HTTP
```

The query request failed due to an HTTP error.

```
public static final ErrorCode NETWORK_UNKNOWN
```

There was an unknown network error.

Method Details

```
public static ErrorCode valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static ErrorCode[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

ExploreRequest

The class *ExploreRequest* is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class ExploreRequest
```

```
extends com.here.android.mpa.search.DiscoveryRequest, com.here.android.mpa.search.Request,  
java.lang.Object
```

Creates a *ExploreRequest* using a specified location context and category filter.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 190: Constructors in *ExploreRequest*

Constructors
<pre>ExploreRequest ()</pre> <p>Default constructor.</p>

Method Summary

Table 191: Methods in *ExploreRequest*

Methods
<pre>public ErrorCode execute (ResultListener<DiscoveryResultPage> listener)</pre> <p>Executes an asynchronous request.</p>
<pre>public ExploreRequest setCategoryFilter (CategoryFilter filter)</pre> <p>Sets a search filter based on categories.</p>
<pre>public ExploreRequest setSearchArea (GeoCoordinate center, int radius)</pre> <p>Sets the search area using a center location and radius.</p>
<pre>public ExploreRequest setSearchArea (GeoBoundingBox boundingArea)</pre> <p>Sets the search area using a GeoBoundingBox.</p>

Methods

```
public ExploreRequest setSearchCenter (GeoCoordinate center)
```

Sets the search center.

Class Details

Creates a [ExploreRequest](#) using a specified location context and category filter. An explore request is used for retrieving a list of nearby relevant places for a given position. It answers the question "What interesting places are near a location?" The results returned are confined to those located in the current search area and are ordered by popularity. If a category filter is provided, the created request will limit results to include only items with the specified categories.

A search location context must be provided by setting either a search center using [setSearchCenter\(GeoCoordinate\)](#), a search area using [setSearchArea\(GeoCoordinate, int\)](#) or [setSearchArea\(GeoBoundingBox\)](#) or a bounding map viewport using [setMapViewport\(GeoBoundingBox\)](#). Failing to set a map viewport will result in an [INVALID_PARAMETER](#) when executing the request.

Constructor Details

ExploreRequest ()

Default constructor.

A search location context must be provided by setting either a search center using [setSearchCenter\(GeoCoordinate\)](#), a search area using [setSearchArea\(GeoCoordinate, int\)](#) or [setSearchArea\(GeoBoundingBox\)](#) or a bounding map viewport using [setMapViewport\(GeoBoundingBox\)](#). Failing to set a map viewport will result in an [INVALID_PARAMETER](#) when executing the request.

Method Details

```
public ErrorCode execute (ResultListener<DiscoveryResultPage> listener)
```

Executes an asynchronous request.

Parameters:

- **listener**

A ResultListener passed along with the request to monitor progress

Returns:

The ErrorCode representing an appropriate result

```
public ExploreRequest setCategoryFilter (CategoryFilter filter)
```

Sets a search filter based on categories.

Parameters:

- **filter**

A CategoryFilter representing the category filter. When a CategoryFilter is specified, the result items will be limited to the categories defined in the filter.

Returns:

The ExploreRequest.

```
public ExploreRequest setSearchArea (GeoCoordinate center, int radius)
```

Sets the search area using a center location and radius.

Parameters:

- **center**
The GeoCoordinate representing the search area center location.
- **radius**
The search area circle radius in meters.

Returns:

The ExploreRequest.

```
public ExploreRequest setSearchArea (GeoBoundingBox boundingArea)
```

Sets the search area using a GeoBoundingBox .

Parameters:

- **boundingArea**
The GeoBoundingBox representing the search area.

Returns:

The ExploreRequest.

```
public ExploreRequest setSearchCenter (GeoCoordinate center)
```

Sets the search center.

Parameters:

- **center**
The GeoCoordinate representing the location context used to search for nearby places.

Returns:

The ExploreRequest.

ExtendedAttribute

The class `ExtendedAttribute` is a member of `com.here.android.mpa.search`.

Class Summary

public class **ExtendedAttribute**

extends java.lang.Object

Represents additional detailed information about a `Place`.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 192: Methods in ExtendedAttribute

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see <code>java.lang.Object</code></p>
<pre>public String getAttribution ()</pre> <p>Gets a ready-to-display (HTML formatted) string containing the source attribution text for this place.</p>
<pre>public String getId ()</pre> <p>Gets the identifier for the <code>ExtendedAttribute</code>.</p>
<pre>public String getLabel ()</pre> <p>Gets the localized display label for the <code>ExtendedAttribute</code>.</p>
<pre>public String getText ()</pre> <p>Gets the String representation of <code>ExtendedAttribute</code> information, which can be displayed directly on the client device.</p>
<pre>public Link getVia ()</pre> <p>Gets a <code>Link</code> object to the external website of the supplier of the information.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see <code>java.lang.Object</code></p>

Class Details

Represents additional detailed information about a `Place`.

This extensible collection of attributes that can include the following items with these identifier values:

- payment - A list of available payment methods (such as cash, credit card, direct debit, etc.)
- openingHours - A list of hours during which the place is open for business
- annualClosings - A description of annual closing dates such as holidays or other special occasions
- price - A price list
- nearestLandmark - A description of the nearest landmark

- languagesSpoken - A list of the languages that are spoken at the place
- availableParking - A list of parking options available nearby
- smoking - Whether smoking is allowed
- disabledAccess - Whether disabled access is available

Method Details

```
public boolean equals (Object obj)
```

For documentation, see *java.lang.Object*

Parameters:

- **obj**

```
public String getAttribution ()
```

Gets a ready-to-display (HTML formatted) string containing the source attribution text for this place.

The Places API gives access to content that is provided by a number of sources. Client applications must display the source attribution next to the content. This requirement forms part of the terms and conditions of the API.

The code snippet below demonstrates how to display the string in an Android TextView

```
TextView textView = (TextView) findViewById(R.id.attributionText);
textView.setMovementMethod(LinkMovementMethod.getInstance());
```

Returns:

The HTML formatted attribution string

```
public String getId ()
```

Gets the identifier for the ExtendedAttribute .

Returns:

The attribute identifier

```
public String getLabel ()
```

Gets the localized display label for the ExtendedAttribute .

Returns:

The display label

```
public String getText ()
```

Gets the String representation of ExtendedAttribute information, which can be displayed directly on the client device.

Note: if the text represents a list of items, the items are separated by a line break entity (`
` if the text format is HTML-encoded or `\n` if the text format is plain).

Returns:

The RichText display text

```
public Link getVia ()
```

Gets a Link object to the external website of the supplier of the information. This link must be used for attribution when rich text attribution is not being used.

Returns:

The Link object to the external website of the supplier of the information

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

GeocodeRequest

The class `GeocodeRequest` is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class GeocodeRequest  
extends com.here.android.mpa.search.Request, java.lang.Object
```

`GeocodeRequest` represents an extended Request used to retrieve Location data by way of Geocoder search services.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 193: Constructors in `GeocodeRequest`

Constructors
<code>GeocodeRequest (String query)</code> Creates a geocoder request that resolves a free text query into a Location .

Method Summary

Table 194: Methods in GeocodeRequest

Methods
<pre>public ErrorCode execute (ResultListener<Location> listener)</pre> <p>Executes an asynchronous request.</p>
<pre>public int getCollectionSize ()</pre> <p>Gets the current collection size being used for request responses.</p>
<pre>public GeocodeRequest setCollectionSize (int value)</pre> <p>Sets a collection size to be used for request responses.</p>
<pre>public GeocodeRequest setMapViewport (GeoBoundingBox mapViewport)</pre> <p>The map viewport is a bounding box of the map area currently visible to the user.</p>
<pre>public GeocodeRequest setSearchArea (GeoCoordinate center, int radius)</pre> <p>Sets the search area using a center location and radius.</p>
<pre>public GeocodeRequest setSearchArea (GeoBoundingBox boundingArea)</pre> <p>Sets the search area using a GeoBoundingBox .</p>

Class Details

GeocodeRequest represents an extended Request used to retrieve Location data by way of Geocoder search services.

Note: The response to a GeocodeRequest is a list of Location objects.

Constructor Details

GeocodeRequest (String query)

Creates a geocoder request that resolves a free text query into a [Location](#).

Parameters:

- **query**

Query text specifying the address to locate

Throws:

- **IllegalArgumentException**

Upon a failure to handle a passed argument.

Method Details

public ErrorCode execute (ResultListener<Location> listener)

Executes an asynchronous request.

Parameters:

- **listener**

A ResultListener passed along with the request to monitor progress

Returns:

The ErrorCode representing an appropriate result

```
public int getCollectionSize ()
```

Gets the current collection size being used for request responses.

Returns:

The current response collection size

```
public GeocodeRequest setCollectionSize (int value)
```

Sets a collection size to be used for request responses. The maximum number of result items in each collection will be limited to this value. The valid value range is [1..100]. The default collection size is 20.

Parameters:

- **value**

Desired response collection size per request.

Returns:

This GeocodeRequest object

```
public GeocodeRequest setMapViewport (GeoBoundingBox mapViewport)
```

The map viewport is a bounding box of the map area currently visible to the user. The viewport can act as an implicit location context in the absence of an explicit location context. To ensure you get the best results possible, you should always set a viewport if there is a map visible to the user.

Parameters:

- **mapViewport**

The bounding box of the map area currently visible.

```
public GeocodeRequest setSearchArea (GeoCoordinate center, int radius)
```

Sets the search area using a center location and radius.

Parameters:

- **center**

The GeoCoordinate representing the search area center location.

- **radius**

The search area circle radius in meters.

Returns:

The GeocodeRequest.

```
public GeocodeRequest setSearchArea (GeoBoundingBox boundingArea)
```

Sets the search area using a GeoBoundingBox .

Parameters:

- **boundingArea**

The GeoBoundingBox representing the search area.

Returns:

The GeocodeRequest.

HereRequest

The class *HereRequest* is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class HereRequest
```

```
extends com.here.android.mpa.search.DiscoveryRequest, com.here.android.mpa.search.Request,  
java.lang.Object
```

The *HereRequest* answers the questions "Where am I?" and "What's right here where I am standing?" The search results consist of a list of places with addresses that lie within the vicinity of the search location.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 195: Constructors in HereRequest

Constructors
<code>HereRequest ()</code>
Default constructor.

Method Summary

Table 196: Methods in HereRequest

Methods
<code>public HereRequest addBuildingFilter (String buildingId)</code>

Methods

Sets a search filter based on building identifier.

```
public ErrorCode execute (ResultListener<DiscoveryResultPage> listener)
```

Executes an asynchronous request.

```
public HereRequest setCategoryFilter (CategoryFilter filter)
```

Sets a search filter based on categories.

```
public HereRequest setSearchCenter (GeoCoordinate center)
```

Sets the search center.

Class Details

The [HereRequest](#) answers the questions "Where am I?" and "What's right here where I am standing?" The search results consist of a list of places with addresses that lie within the vicinity of the search location. The feature is typically used by applications that include "check-in" or "click on map to get more information" options.

A search location context must be provided by setting either a search center using [setSearchCenter\(GeoCoordinate\)](#) or a bounding map viewport using [setMapViewport\(GeoBoundingBox\)](#). Failing to set a map viewport will result in an [INVALID_PARAMETER](#) when executing the request.

Constructor Details

`HereRequest ()`

Default constructor.

A search location context must be provided by setting either a search center using [setSearchCenter\(GeoCoordinate\)](#) or a bounding map viewport using [setMapViewport\(GeoBoundingBox\)](#). Failing to set a map viewport will result in an [INVALID_PARAMETER](#) when executing the request.

Method Details

`public HereRequest addBuildingFilter (String buildingId)`

Sets a search filter based on building identifier. More than one building identifier filter can be applied per request.

The building identifier can also be retrieved using [addReference\(String\)](#) and [getReference\(String\)](#) (or [addReference\(String\)](#) and [getReference\(String\)](#)).

Parameters:

- **buildingId**

A building identifier. When a filter is specified, the result items will be limited to the buildings with identifiers defined in the filter.

Returns:

The `HereRequest`.

See also:

<http://places.api.here.com/places/static/doc/public/#topics/external-references.html>

Request <T> #BUILDING_ID_REFERENCE_NAME

`addReference(String)`

`getReference(String)`

`addReference(String)`

`getReference(String)`

```
public ErrorCode execute (ResultListener<DiscoveryResultPage> listener)
```

Executes an asynchronous request.

Parameters:

- `listener`

A `ResultListener` passed along with the request to monitor progress

Returns:

The `ErrorCode` representing an appropriate result

```
public HereRequest setCategoryFilter (CategoryFilter filter)
```

Sets a search filter based on categories.

Parameters:

- `filter`

A `CategoryFilter` representing the category filter. When a `CategoryFilter` is specified, the result items will be limited to the categories defined in the filter.

Returns:

The `HereRequest`.

```
public HereRequest setSearchCenter (GeoCoordinate center)
```

Sets the search center.

Parameters:

- `center`

The `GeoCoordinate` representing the location context used to search for nearby places.

Returns:

The `HereRequest`.

ImageMedia

The class `ImageMedia` is a member of `com.here.android.mpa.search`.

Class Summary

```
public final class ImageMedia  
extends com.here.android.mpa.search.Media, java.lang.Object
```

Represents image content related to a `Place`.

[For complete information, see the section [Class Details](#)]

See also:

[getImages\(\)](#)

Method Summary

Table 197: Methods in `ImageMedia`

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see <code>java.lang.Object</code></p>
<pre>public String getDimensionHref (int width, int height)</pre> <p>Get the HREF to retrieve an image with specific width-height dimensions.</p>
<pre>public String getId ()</pre> <p>Gets the unique identifier for the Image.</p>
<pre>public String getUrl ()</pre> <p>Gets the String representation of the URL for the source of the image file.</p>
<pre>public UserLink getUser ()</pre> <p>Gets the details of the User who contributed the Image.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see <code>java.lang.Object</code></p>

Class Details

Represents image content related to a `Place`.

See also:

[getImages\(\)](#)

Method Details

```
public boolean equals (Object obj)
```

For documentation, see *java.lang.Object*

Parameters:

- **obj**

```
public String getDimensionHref (int width, int height)
```

Get the HREF to retrieve an image with specific width-height dimensions. A HTTP request using this HREF will return the image data.

Parameters:

- **width**
The image width.
- **height**
The image height.

Returns:

The HREF to retrieve the image with the specified width-height dimensions. Can be `null` if an image with the specified dimensions is unavailable.

See also:

[*addImageDimensions\(int, int\)*](#)

```
public String getId ()
```

Gets the unique identifier for the `Image`.

Note: an ID for an `Image` is optional, so a call to this method could return `null`.

Returns:

The ID (could be `null`)

```
public String getUrl ()
```

Gets the String representation of the URL for the source of the image file.

Returns:

The URL

```
public UserLink getUser ()
```

Gets the details of the `User` who contributed the `Image`.

Note: user contribution for an `Image` is optional, so a call to this method could return `null`.

Returns:

The `User` who contributed the `Image` (could be `null`)

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

Link

The class `Link` is a member of `com.here.android.mpa.search`.

Class Summary

```
public class Link
```

`extends java.lang.Object`

Represents a `Link` indicating that the application must make another request to retrieve the desired resource.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 198: Methods in `Link`

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see <code>java.lang.Object</code></p>
<pre>public String getIconUrl ()</pre> <p>Gets the URL to retrieve the icon for the resource to which the <code>Link</code> refers.</p>
<pre>public String getId ()</pre> <p>Gets the unique identifier for the resource to which the <code>Link</code> refers.</p>
<pre>public String getTitle ()</pre> <p>Gets the localized title for the resource to which the <code>Link</code> refers.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see <code>java.lang.Object</code></p>

Class Details

Represents a `Link` indicating that the application must make another request to retrieve the desired resource.



Note: a `Link` contains metadata about the linked resource.

Method Details

```
public boolean equals (Object obj)
```

For documentation, see `java.lang.Object`

Parameters:

- `obj`

```
public String getIconUrl ()
```

Gets the URL to retrieve the icon for the resource to which the `Link` refers.

Note: an icon URL for a linked object is optional, so a call to this method could return `empty`.

Returns:

The icon URL (could be `empty`)

```
public String getId ()
```

Gets the unique identifier for the resource to which the `Link` refers.

Note: an ID for a linked object is optional, so a call to this method could return `empty`.

Returns:

The ID (could be `empty`)

```
public String getTitle ()
```

Gets the localized title for the resource to which the `Link` refers. Client devices can display this title within an application.

Note: a title for a linked object is optional, so a call to this method could return `empty`.

Returns:

The title (could be `empty`)

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

Location

The class `Location` is a member of `com.here.android.mpa.search`.

Class Summary

public class **Location**

extends java.lang.Object

Represents the physical location of a *Place*.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 199: Constructors in Location

Constructors
Location (GeoCoordinate coordinate) Construct a Location with a initial GeoCoordinate .

Method Summary

Table 200: Methods in Location

Methods
public boolean equals (Object obj)
public Address getAddress () Gets the <i>Address</i> for the Location .
public GeoBoundingBox getBoundingBox () Gets the <i>GeoBoundingBox</i> representing the map view bounding box for the <i>Location</i> .
public GeoCoordinate getCoordinate () Gets the <i>GeoCoordinate</i> indicating where the map marker for the <i>Location</i> is rendered.
public String getId () Gets the java.lang.String representation of the unique ID for the <i>Location</i> .
public String getReference (String name) Get the reference identifier for a specific domain.
public int hashCode () For documentation, see <i>java.lang.Object</i>
public String toString () For documentation, see <i>java.lang.Object</i>

Class Details

Represents the physical location of a *Place*.

Constructor Details

`Location (GeoCoordinate coordinate)`

Construct a `Location` with a initial `GeoCoordinate`.

Parameters:

- `coordinate`

Initial location coordinate.

Method Details

`public boolean equals (Object obj)`

Parameters:

- `obj`

`public Address getAddress ()`

Gets the `Address` for the `Location`.

Returns:

The `Address`, or `null` if unavailable

`public GeoBoundingBox getBoundingBox ()`

Gets the `GeoBoundingBox` representing the map view bounding box for the `Location`.

Returns:

The `GeoBoundingBox`, or `null` if unavailable

`public GeoCoordinate getCoordinate ()`

Gets the `GeoCoordinate` indicating where the map marker for the `Location` is rendered.

Returns:

The `GeoCoordinate`, or `null` if unavailable

`public String getId ()`

Gets the `java.lang.String` representation of the unique ID for the `Location`.

Returns:

The ID

```
public String getReference (String name)
```

Get the reference identifier for a specific domain. For example, a place can have a reference to an extruded building object in the map. The reference identifier can be retrieved by calling this method with name `BUILDING_ID_REFERENCE_NAME`. NOTE: A reference will not be returned if it has not been added to the request using `Request<T>#addReference`.

Parameters:

- **name**

The reference name.

Returns:

The reference identifier. If the reference identifier does not exist, an empty String is returned.

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

```
public String toString ()
```

For documentation, see `java.lang.Object`

Media

The class `Media` is a member of [com.here.android.mpa.search](#).

Class Summary

```
public abstract class Media
```

```
extends java.lang.Object
```

Represents the base class for additional rich content about a [Place](#).

[For complete information, see the section [Class Details](#)]

Nested Class Summary

Table 201: Nested Classes in Media

Nested Classes
<pre>public static final enumeration Media.Type</pre> <p>Represents values describing supported Media types for a Place.</p>

Method Summary

Table 202: Methods in Media

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public String getAttributionText ()</pre> <p>Gets the String representation of the attribution text for the <code>Media</code>, according to the terms and conditions of the originating source.</p>
<pre>public SupplierLink getSupplier ()</pre> <p>Gets the Link to a resource representing the supplier of the <code>Media</code> (the object provides details about the origin of the information).</p>
<pre>public Type getType ()</pre> <p>Gets the specialized <code>MediaType</code> for the <code>Media</code>.</p>
<pre>protected String getUrl ()</pre> <pre>public ViaLink getVia ()</pre> <p>Gets the Link to the origin of the <code>Media</code>, typically a website of the supplier.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see java.lang.Object</p>

Class Details

Represents the base class for additional rich content about a [Place](#).

The following specialized content types might be available:

- Editorial content
- Image content
- Review content

Method Details

`public boolean equals (Object obj)`

For documentation, see [java.lang.Object](#)

Parameters:

- `obj`

`public String getAttributionText ()`

Gets the String representation of the attribution text for the `Media`, according to the terms and conditions of the originating source.

Returns:

The attribution text

```
public SupplierLink getSupplier ()
```

Gets the Link to a resource representing the supplier of the Media (the object provides details about the origin of the information).

Returns:

The supplier Link

```
public Type getType ()
```

Gets the specialized MediaType for the Media .

Returns:

The MediaType

```
protected String getUrl ()
```

```
public ViaLink getVia ()
```

Gets the Link to the origin of the Media , typically a website of the supplier.

Returns:

The via Link

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

Type

The enumeration *Type* is a member of *com.here.android.mpa.search.Media*.

Enumeration Summary

```
public static final enumeration Media.Type
```

```
extends java.lang.Enum, java.lang.Object
```

Represents values describing supported *Media* types for a *Place*.

[For complete information, see the section *Enumeration Details*]

Enum Constant Summary

Table 203: Enum Constants in Type

Fields
<pre>public static final Type UNKNOWN</pre> <p>Unknown content.</p>
<pre>public static final Type EDITORIAL</pre> <p>Editorial content.</p>
<pre>public static final Type IMAGE</pre> <p>Image content.</p>
<pre>public static final Type RATING</pre> <p>Rating content.</p>
<pre>public static final Type REVIEW</pre> <p>Review content.</p>

Method Summary

Table 204: Methods in Type

Methods
<pre>public static Type valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static Media.Type[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing supported *Media* types for a *Place*.

Enum Constant Details

```
public static final Type UNKNOWN
```

Unknown content.

```
public static final Type EDITORIAL
```

Editorial content.

```
public static final Type IMAGE
```

Image content.

```
public static final Type RATING
```

Rating content.

```
public static final Type REVIEW
```

Review content.

Method Details

```
public static Type valueOf (String name)
```

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- **name**

A string containing the name of the enumeration member whose value is to be retrieved.

```
public static Media.Type[] values ()
```

This method retrieves an array of constants of the given enum type in the order in which they are declared.

MediaCollectionPage<T>

The class *MediaCollectionPage<T>* is a member of [com.here.android.mpa.search](#).

Type Parameters:

- **T**

Class Summary

```
public final class MediaCollectionPage
```

extends java.lang.Object

Represents a base class for a paginateable collection of *Media* objects of a specific type.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 205: Methods in *MediaCollectionPage<T>*

Methods
<pre>public boolean equals (Object obj)</pre>

Methods

For documentation, see [java.lang.Object](#)

```
public int getAvailable ()
```

Gets the total number of available [Media](#) items within the [MediaCollectionPage](#).

```
public java.util.List <Media> getItems ()
```

Gets the list of [Media](#) items from the current page of the collection.

```
public MediaCollectionPageRequest<T> getNextPageRequest ()
```

Gets the [MediaCollectionPageRequest](#) for requesting the next page of the [MediaCollectionPage](#).

```
public int getOffsetCount ()
```

Gets the collection offset count for the current page of the [MediaCollectionPage](#).

```
public MediaCollectionPageRequest<T> getPreviousPageRequest ()
```

Gets the [MediaCollectionPageRequest](#) for requesting the previous page of the [MediaCollectionPage](#).

```
public Type getType ()
```

Gets the specialized [Media.Type](#) for the [Media](#) objects contained within the [MediaCollectionPage](#).

```
public int hashCode ()
```

For documentation, see [java.lang.Object](#)

Class Details

Represents a base class for a paginateable collection of [Media](#) objects of a specific type.

Note: each collection contains objects of one [Media.Type](#).

Method Details

```
public boolean equals (Object obj)
```

For documentation, see [java.lang.Object](#)

Parameters:

- **obj**

```
public int getAvailable ()
```

Gets the total number of available [Media](#) items within the [MediaCollectionPage](#).

Returns:

The number of available items

```
public java.util.List <Media> getItems ()
```

Gets the list of [Media](#) items from the current page of the collection. The type of each object in the list depends on the [MediaCollectionPage](#).

Note: if a collection is empty, the items attribute is not present and this method will return empty .

Returns:

The list of `Media` objects (could be empty)

```
public MediaCollectionPageRequest<T> getNextPageRequest ()
```

Gets the `MediaCollectionPageRequest` for requesting the next page of the `MediaCollectionPage` .

Returns:

The `MediaCollectionPageRequest` (can be null if next page unavailable)

```
public int getOffsetCount ()
```

Gets the collection offset count for the current page of the `MediaCollectionPage` .

For the first page of results, the offset count is 0. Following any call to `getNextPageRequest()`, the offset count will be greater than 0.

Returns:

The collection offset count

```
public MediaCollectionPageRequest<T> getPreviousPageRequest ()
```

Gets the `MediaCollectionPageRequest` for requesting the previous page of the `MediaCollectionPage` .

Returns:

The `MediaCollectionPageRequest` (can be null if previous page unavailable)

```
public Type getType ()
```

Gets the specialized `Media.Type` for the `Media` objects contained within the `MediaCollectionPage` .

Returns:

The `Media.Type`

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

MediaCollectionPageRequest<T>

The class `MediaCollectionPageRequest<T>` is a member of `com.here.android.mpa.search` .

Type Parameters:

- **T**

Class Summary

```
public class MediaCollectionPageRequest  
extends com.here.android.mpa.search.Request, java.lang.Object
```

Represents an extended Request used to retrieve MediaCollectionPage information for a specific type of *Media* associated with a *Place*, by way of Places search services.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 206: Methods in MediaCollectionPageRequest<T>

Methods
<pre>public ErrorCode execute (ResultListener<MediaCollectionPage<T>> eventListener)</pre> <p>Executes an asynchronous request.</p>

Class Details

Represents an extended Request used to retrieve MediaCollectionPage information for a specific type of *Media* associated with a *Place*, by way of Places search services.

Note: the response to a MediaCollectionPageRequest is a MediaCollectionPage object.

Method Details

```
public ErrorCode execute (ResultListener<MediaCollectionPage<T>>  
eventListener)
```

Executes an asynchronous request.

Parameters:

- **eventListener**

A ResultListener passed along with the request to monitor progress

Returns:

The ErrorCode representing an appropriate result

Place

The class Place is a member of [com.here.android.mpa.search](#).

Class Summary

public class Place

extends java.lang.Object

Represents a set of data about a physical place.

[For complete information, see the section [Class Details](#)]

See also:

[Location](#)

Field Summary

Table 207: Fields in Place

Fields
<pre>public static final String PUBLIC_TRANSPORT RELATED LINK NAME</pre> <p>Key name to get the public-transport DiscoveryLink (from the related attributes) for this Place .</p>
<pre>public static final String RECOMMENDED RELATED LINK NAME</pre> <p>Key name to get the recommended DiscoveryLink (from the related attributes) for this Place .</p>

Method Summary

Table 208: Methods in Place

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public Map getAlternativeNames ()</pre> <p>Gets the alternative names for the Place .</p>
<pre>public String getAttributionText ()</pre> <p>Gets the String representation of the attribution text for the Place .</p>
<pre>public java.util.List <Category> getCategories ()</pre> <p>Gets the list of Category objects assigned to the Place .</p>
<pre>public java.util.List <ContactDetail> getContacts ()</pre> <p>Gets the list of Contact objects for the Place .</p>
<pre>public MediaCollectionPage<EditorialMedia> getEditorials ()</pre> <p>Gets the MediaCollectionPage containing EditorialMedia content for the Place .</p>
<pre>public java.util.List <ExtendedAttribute> getExtendedAttributes ()</pre> <p>Gets additional information about a Place , a list of ExtendedAttribute objects that can include information such as:</p> <ul style="list-style-type: none">• payment - A list of available payment methods (such as cash, credit card, direct debit, etc.)• openingHours - A list of hours during which the place is open for business

Methods

- annualClosings - A description of annual closing dates such as holidays or other special occasions
- price - A price list
- nearestLandmark - A description of the nearest landmark
- languagesSpoken - A list of the languages that are spoken at the place
- availableParking - A list of parking options available nearby
- smoking - Whether smoking is allowed
- disabledAccess - Whether disabled access is available

```
public String getIconUrl ()
```

Gets the URL to retrieve the icon that best represents the Place .

```
public String getId ()
```

Gets the unique identifier for the Place .

```
public MediaCollectionPage<ImageMedia> getImages ()
```

Gets the MediaCollectionPage containing *ImageMedia* content for the Place .

```
public Location getLocation ()
```

Gets the physical Location of the Place .

```
public String getName ()
```

Gets the display name for the Place .

```
public MediaCollectionPage<RatingMedia> getRatings ()
```

Gets the MediaCollectionPage containing *RatingMedia* content for the Place .

```
public String getReference (String name)
```

Get the reference identifier for a specific domain.

```
public java.util.Map <java.lang.String, com.here.android.mpa.search.DiscoveryLink>
```

```
getRelated ()
```

Gets the related places (where available) that might also interest an application user viewing information for the Place .

```
public ReportingLink getReportingLink ()
```

Gets the link for getting options for reporting an place because, for example, if it contains inappropriate content or the place does not exists.

```
public MediaCollectionPage<ReviewMedia> getReviews ()
```

Gets the MediaCollectionPage containing *ReviewMedia* content for the Place .

```
public SupplierLink getSupplier ()
```

Gets the Link for the Place supplier.

```
public Ratings getUserRatings ()
```

Gets the HERE.com user-supplied Ratings for the Place .

```
public String getViewUri ()
```

Gets the String representation of the URI for a user-viewable representation of the Place .

```
public int hashCode ()
```

Methods

For documentation, see [java.lang.Object](#)

Class Details

Represents a set of data about a physical place.

A Place acts as a container for various information about a place, which itself is a point of interest such as a popular restaurant, a park, or someone's home.

Note: a Place can contain attributes, collections of media about the place, and key-value pairs of related places.

See also:

[Location](#)

Field Details

```
public static final String PUBLIC_TRANSPORT RELATED LINK NAME
```

Key name to get the public-transport DiscoveryLink (from the related attributes) for this Place .

```
public static final String RECOMMENDED RELATED LINK NAME
```

Key name to get the recommended DiscoveryLink (from the related attributes) for this Place .

Method Details

```
public boolean equals (Object obj)
```

For documentation, see [java.lang.Object](#)

Parameters:

- **obj**

```
public Map getAlternativeNames ()
```

Gets the alternative names for the Place . The returned Map collection is keyed using a language code (eg. "en").

Note: an alternative name is optional, so a call to this method could return empty .

Returns:

The alternative names (could be empty) collection keyed using a language code (eg. "en").

```
public String getAttributionText ()
```

Gets the String representation of the attribution text for the Place .

Note: attribution text for a Place is optional, so a call to this method could return empty .

Returns:

The attribution text (could be empty)

```
public java.util.List <Category> getCategories ()
```

Gets the list of Category objects assigned to the Place .

Note: categories maybe optional (especially when offline), so a call to this method could return empty .

Returns:

The list of Category objects

```
public java.util.List <ContactDetail> getContacts ()
```

Gets the list of Contact objects for the Place .

Note: contact information for a Place is optional, so a call to this method could return empty .

Returns:

The list of Contact objects (could be empty)

```
public MediaCollectionPage<EditorialMedia> getEditorials ()
```

Gets the MediaCollectionPage containing *EditorialMedia* content for the Place .

Note: editorial content for a Place is optional, so a call to this method could return null .

Returns:

The MediaCollectionPage (could be null)

```
public java.util.List <ExtendedAttribute> getExtendedAttributes ()
```

Gets additional information about a Place , a list of ExtendedAttribute objects that can include information such as:

- payment - A list of available payment methods (such as cash, credit card, direct debit, etc.)
- openingHours - A list of hours during which the place is open for business
- annualClosings - A description of annual closing dates such as holidays or other special occasions
- price - A price list
- nearestLandmark - A description of the nearest landmark
- languagesSpoken - A list of the languages that are spoken at the place
- availableParking - A list of parking options available nearby

- `smoking` - Whether smoking is allowed
- `disabledAccess` - Whether disabled access is available

Returns:

The list of `ExtendedAttribute` objects

```
public String getIconUrl ()
```

Gets the URL to retrieve the icon that best represents the `Place`.

Returns:

The icon URL.

```
public String getId ()
```

Gets the unique identifier for the `Place`. Applications that want to keep a reference to a place should store the ID for subsequent linking to additional resources.

Returns:

The ID

```
public MediaCollectionPage<ImageMedia> getImages ()
```

Gets the `MediaCollectionPage` containing `ImageMedia` content for the `Place`.

Note: image content for a `Place` is optional, so a call to this method could return `null`.

Returns:

The `MediaCollectionPage` (could be `null`)

```
public Location getLocation ()
```

Gets the physical `Location` of the `Place`.

Returns:

The `Location`

```
public String getName ()
```

Gets the display name for the `Place`.

Returns:

The `Place` name

```
public MediaCollectionPage<RatingMedia> getRatings ()
```

Gets the MediaCollectionPage containing *RatingMedia* content for the Place .

Note: rating content for a Place is optional, so a call to this method could return null .

Returns:

The MediaCollectionPage (could be null)

```
public String getReference (String name)
```

Get the reference identifier for a specific domain. For example, a place can have a reference to an extruded building object in the map. The reference identifier can be retrieved by calling this method with name 'building'. NOTE: A reference will not be returned if it has not been queried with the PlacesBaseRequest#setReferences function.

Parameters:

- **name**

The reference name.

Returns:

The reference identifier. If the reference identifier does not exist, an empty String is returned.

```
public java.util.Map <java.lang.String,  
com.here.android.mpa.search.DiscoveryLink> getRelated ()
```

Gets the related places (where available) that might also interest an application user viewing information for the Place . The returned Map is keyed by a title for the related places (e.g. PUBLIC_TRANSPORT RELATED_LINK_NAME), while the associated value is a link to a page of related places.

Note: if there are no related places, the attribute is not present and this method will return null .

Returns:

The java.util.Map of key-value elements representing the collection of links to places related to the Place (could be empty)

```
public ReportingLink getReportingLink ()
```

Gets the link for getting options for reporting an place because, for example, if it contains inappropriate content or the place does not exists.

Returns:

The report link.

```
public MediaCollectionPage<ReviewMedia> getReviews ()
```

Gets the MediaCollectionPage containing *ReviewMedia* content for the Place .

Note: review content for a `Place` is optional, so a call to this method could return `null`.

Returns:

The `MediaCollectionPage` (could be `null`)

```
public SupplierLink getSupplier ()
```

Gets the `Link` for the `Place` supplier. A supplier link extends the standard link object with an optional icon link pointing to the supplier's brand icon.

Note: a `Link` for a `Place` supplier is optional, so a call to this method could return `null`.

Returns:

The supplier `Link` (could be `null`)

```
public Ratings getUserRatings ()
```

Gets the HERE.com user-supplied `Ratings` for the `Place`.

Returns:

The HERE.com user-supplied `Ratings` for the `Place`.

```
public String getViewUri ()
```

Gets the `String` representation of the `URI` for a user-viewable representation of the `Place`. Applications must provide at least one such `URI` for every `Place` they fetch.

Returns:

The `URI` to a viewable site for the `Place`

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

PlaceLink

The class `PlaceLink` is a member of `com.here.android.mpa.search`.

Class Summary

```
public class PlaceLink
```

```
extends com.here.android.mpa.search.DiscoveryResult, com.here.android.mpa.search.Link, java.lang.Object
```

Represents discovery information about a `Place`.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 209: Methods in PlaceLink

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public double getAverageRating ()</pre> <p>Gets the average rating for a Place.</p>
<pre>public GeoBoundingBox getBoundingBox ()</pre> <p>Gets the GeoBoundingBox describing a range of coordinates that correspond to the Place.</p>
<pre>public Category getCategory ()</pre> <p>Gets the Category for the Place.</p>
<pre>public PlaceRequest getDetailsRequest ()</pre> <p>Gets the request to retrieve the Place details.</p>
<pre>public double getDistance ()</pre> <p>Gets the distance to the Place, in meters.</p>
<pre>public GeoCoordinate getPosition ()</pre> <p>Gets the GeoCoordinate representing the geographical position of the Place.</p>
<pre>public String getReference (String name)</pre> <p>Get the reference identifier for a specific domain.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see java.lang.Object</p>
<pre>public boolean isSponsored ()</pre> <p>Determines whether the search result is sponsored.</p>

Class Details

Represents discovery information about a [Place](#).

Note: detailed [Place](#) information is retrieved by way of the [PlaceRequest](#) returned from a call to the [getDetailsRequest\(\)](#) method.

Method Details

`public boolean equals (Object obj)`

For documentation, see [java.lang.Object](#)

Parameters:

- `obj`

```
public double getAverageRating ()
```

Gets the average rating for a *Place*.

Note: the average rating is set to zero for places with no ratings.

Returns:

The average rating

```
public GeoBoundingBox getBoundingBox ()
```

Gets the GeoBoundingBox describing a range of coordinates that correspond to the *Place*. Typically, bounding boxes are associated with places such as cities and countries.

Note: bounding box information for a *Place* is optional, so a call to this method could return null .

Returns:

The GeoBoundingBox containing the *Place* (could be null)

```
public Category getCategory ()
```

Gets the Category for the *Place*.

Note: a category is optional (especially when offline), so a call to this method could return null .

Returns:

The Category

```
public PlaceRequest getDetailsRequest ()
```

Gets the request to retrieve the *Place* details.

Returns:

The *PlaceRequest* to retrieve the *Place* details

```
public double getDistance ()
```

Gets the distance to the *Place*, in meters.

Returns:

The distance

```
public GeoCoordinate getPosition ()
```

Gets the GeoCoordinate representing the geographical position of the *Place*.

Returns:

The GeoCoordinate

```
public String getReference (String name)
```

Get the reference identifier for a specific domain. For example, a place can have a reference to an extruded building object in the map. The reference identifier can be retrieved by calling this method with name `BUILDING_ID_REFERENCE_NAME`. NOTE: A reference will not be returned if it has not been added to the request using `Request<T>#addReference`.

Parameters:

- **name**

The reference name.

Returns:

The reference identifier. If the reference identifier does not exist, an empty String is returned.

```
public int hashCode ()
```

For documentation, see `java.lang.Object`

```
public boolean isSponsored ()
```

Determines whether the search result is sponsored. Applications must provide some visual differentiation between sponsored search results and regular search results.

Returns:

True if the search result is sponsored, false otherwise

PlaceRequest

The class `PlaceRequest` is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class PlaceRequest
```

```
extends com.here.android.mpa.search.Request, java.lang.Object
```

Represents an extended Request used to retrieve a `Place` object by way of Places search services.

[For complete information, see the section [Class Details](#)]

See also:

[ExploreRequest](#)

[HereRequest](#)

[SearchRequest](#)

Constructor Summary

Table 210: Constructors in PlaceRequest

Constructors
<pre>PlaceRequest (String source, String id)</pre> <p>Creates a PlaceRequest based on an external reference source and identifier.</p>

Method Summary

Table 211: Methods in PlaceRequest

Methods
<pre>public void addImageDimensions (int width, int height)</pre> <p>Request Image Media with specific dimensions.</p>
<pre>public PlaceRequest addReference (String name)</pre> <p>This function adds the name of a requested reference identifiers to be returned in the results.</p>
<pre>public ErrorCode execute (ResultListener<Place> listener)</pre> <p>Executes an asynchronous request.</p>
<pre>public List getReferences ()</pre> <p>This function returns the names of requested reference identifiers to be returned in the results.</p>
<pre>public RichTextFormatting getRichTextFormatting ()</pre> <p>Gets the current RichTextFormatting type being used in request responses.</p>
<pre>public PlaceRequest setRichTextFormatting (RichTextFormatting value)</pre> <p>Sets a RichTextFormatting to be used in request responses.</p>

Class Details

Represents an extended Request used to retrieve a Place object by way of Places search services.

See also:

[ExploreRequest](#)

[HereRequest](#)

[SearchRequest](#)

Constructor Details

`PlaceRequest (String source, String id)`

Creates a PlaceRequest based on an external reference source and identifier.

Parameters:

- **source**
Name of the external reference source.
- **id**
The identifier of the requested place in external system.

See also:

<http://places.api.here.com/places/static/doc/public/#topics/external-references.html>

[addReference\(String\)](#)

[addReference\(String\)](#)

Request <T> #PVID_ID_REFERENCE_NAME

Request <T> #VENUES_ID_REFERENCE_NAME

Request <T> #VENUES_CONTENT_ID_REFERENCE_NAME

Request <T> #VENUES_DESTINATION_ID_REFERENCE_NAME

Request <T> #VENUES_VENUE_ID_REFERENCE_NAME

[getReference\(String\)](#)

[getReference\(String\)](#)

Method Details

`public void addImageDimensions (int width, int height)`

Request Image Media with specific dimensions. At least one of the sizes (width or height) needs to be valid (greater than 0).

Parameters:

- **width**
Image width (pass 0 for any width)
- **height**
Image height (pass 0 for any height)

`public PlaceRequest addReference (String name)`

This function adds the name of a requested reference identifiers to be returned in the results. For example, to retrieve an extruded building identifier, set this value to `BUILDING_ID_REFERENCE_NAME`.

Parameters:

- **name**
Name of reference identifier to retrieve.



Returns:

True if name added, false otherwise.

```
public ErrorCode execute (ResultListener<Place> listener)
```

Executes an asynchronous request.

Parameters:

- **listener**

A ResultListener passed along with the request to monitor progress

Returns:

The ErrorCode representing an appropriate result

```
public List getReferences ()
```

This function returns the names of requested reference identifiers to be returned in the results.

Returns:

List of the names of reference identifiers to be returned in the result.

```
public RichTextFormatting getRichTextFormatting ()
```

Gets the current RichTextFormatting type being used in request responses.

Returns:

The current RichTextFormatting type

```
public PlaceRequest setRichTextFormatting (RichTextFormatting value)
```

Sets a RichTextFormatting to be used in request responses. The default formatting is [HTML](#).

Parameters:

- **value**

Desired RichTextFormatting

Returns:

This [PlaceRequest](#) object

RatingMedia

The class *RatingMedia* is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class RatingMedia  
extends com.here.android.mpa.search.Media, java.lang.Object
```

Represents rating content about a *Place*.

[For complete information, see the section [Class Details](#)]

See also:

[getRatings\(\)](#)

Method Summary

Table 212: Methods in RatingMedia

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public double getAverage ()</pre> <p>Gets the average rating for the <i>Place</i>.</p>
<pre>public int getCount ()</pre> <p>Gets the count of individual contributions that users provided for rating the <i>Place</i>.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see java.lang.Object</p>

Class Details

Represents rating content about a *Place*. Each individual Rating contains information about the rating itself, the user who contributed the rating, and a rating that the user offered for the place.

See also:

[getRatings\(\)](#)

Method Details

```
public boolean equals (Object obj)
```

For documentation, see [java.lang.Object](#)

Parameters:

- **obj**

```
public double getAverage ()
```

Gets the average rating for the *Place*.

Returns:

The average rating

```
public int getCount ()
```

Gets the count of individual contributions that users provided for rating the *Place*.

Returns:

The total ratings count

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

Ratings

The class *Ratings* is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class Ratings
```

extends java.lang.Object

Represents a summary of user-supplied ratings for a *Place*.

[For complete information, see the section [Class Details](#)]

See also:

[getUserRatings\(\)](#)

Method Summary

Table 213: Methods in Ratings

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see <i>java.lang.Object</i></p>
<pre>public double getAverage ()</pre> <p>Gets the average rating for the <i>Place</i>.</p>
<pre>public int getCount ()</pre> <p>Gets the count of individual contributions that users provided for rating the <i>Place</i>.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see <i>java.lang.Object</i></p>

Class Details

Represents a summary of user-supplied ratings for a [Place](#).

Note: ratings are normalized to values from [0..5], to compensate for potential differences between supplier ratings systems.

See also:

[getUserRatings\(\)](#)

Method Details

```
public boolean equals (Object obj)
```

For documentation, see [java.lang.Object](#)

Parameters:

- **obj**

```
public double getAverage ()
```

Gets the average rating for the [Place](#).

Returns:

The average rating

```
public int getCount ()
```

Gets the count of individual contributions that users provided for rating the [Place](#).

Returns:

The total ratings count

```
public int hashCode ()
```

For documentation, see [java.lang.Object](#)

ReportingLink

The class [ReportingLink](#) is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class ReportingLink
```

```
extends com.here.android.mpa.search.Link, java.lang.Object
```

Represents a [ReportingLink](#) for getting options for reporting on content if it contains inappropriate content.

[For complete information, see the section [Class Details](#)]

Method Summary

Table 214: Methods in ReportingLink

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public String getTitle ()</pre> <p>Gets the localized title for the resource to which the Link refers.</p>
<pre>public String getUrl ()</pre> <p>Gets the String representation of the reporting URL</p>
<pre>public int hashCode ()</pre>

Class Details

Represents a [ReportingLink](#) for getting options for reporting on content if it contains inappropriate content.

Method Details

`public boolean equals (Object obj)`

For documentation, see [java.lang.Object](#)

Parameters:

- `obj`

`public String getTitle ()`

Gets the localized title for the resource to which the Link refers. Client devices can display this title within an application.

Note: a title for a linked object is optional, so a call to this method could return empty .

Returns:

The title (could be empty)

`public String getUrl ()`

Gets the String representation of the reporting URL

Returns:

The URL

```
public int hashCode ()
```

Request<T>

The class `Request<T>` is a member of `com.here.android.mpa.search`.

Type Parameters:

- `T`

Data type for results

Class Summary

public abstract class `Request`

extends java.lang.Object

Represents a base class for a search request.

[For complete information, see the section [Class Details](#)]

Field Summary

Table 215: Fields in Request<T>

Fields
<pre>public static final String PVID_ID_REFERENCE_NAME</pre> <p>Name used to get core POI identifier references.</p>
<pre>public static final String VENUES_CONTENT_ID_REFERENCE_NAME</pre> <p>Name used to get only venues.content identifier references.</p>
<pre>public static final String VENUES_DESTINATION_ID_REFERENCE_NAME</pre> <p>Name used to get only venues.destination identifier references.</p>
<pre>public static final String VENUES_ID_REFERENCE_NAME</pre> <p>Name used to get all venues identifier references.</p>
<pre>public static final String VENUES_VENUE_ID_REFERENCE_NAME</pre> <p>Name used to get only venues.venue identifier references.</p>

Method Summary

Table 216: Methods in Request<T>

Methods
<pre>public boolean cancel ()</pre> <p>Cancels any pending results from an invoked request.</p>

Class Details

Represents a base class for a search request.

Field Details

See also:

<http://places.api.here.com/places/static/doc/public/#topics/external-references.html>

[addReference\(String\)](#)

[getReference\(String\)](#)

[addReference\(String\)](#)

[getReference\(String\)](#)

public static final String **PVID_ID_REFERENCE_NAME**

Name used to get core POI identifier references.

Use [addReference\(String\)](#) to be able to retrieve the POI identifier from the returned PlaceLink (using [getReference\(String\)](#)).

The POI identifier can also be retrieved using [addReference\(String\)](#) and [getReference\(String\)](#).

See also:

<http://places.api.here.com/places/static/doc/public/#topics/external-references.html>

[addReference\(String\)](#)

[getReference\(String\)](#)

[addReference\(String\)](#)

[getReference\(String\)](#)

public static final String **VENUES_CONTENT_ID_REFERENCE_NAME**

Name used to get only venues.content identifier references.

Use [addReference\(String\)](#) to be able to retrieve the venues.content identifier from the returned PlaceLink (using [getReference\(String\)](#)).

The venues.content identifier can also be retrieved using [addReference\(String\)](#) and [getReference\(String\)](#).

See also:

<http://places.api.here.com/places/static/doc/public/#topics/external-references.html>

[addReference\(String\)](#)

[getReference\(String\)](#)

[addReference\(String\)](#)

`getReference(String)`

```
public static final String VENUES_DESTINATION_ID_REFERENCE_NAME
```

Name used to get only venues.destination identifier references.

Use `addReference(String)` to be able to retrieve the venues.destination identifier from the returned PlaceLink (using `getReference(String)`).

The venues.destination identifier can also be retrieved using `addReference(String)` and `getReference(String)`.

See also:

<http://places.api.here.com/places/static/doc/public/#topics/external-references.html>

`addReference(String)`

`getReference(String)`

`addReference(String)`

`getReference(String)`

```
public static final String VENUES_ID_REFERENCE_NAME
```

Name used to get all venues identifier references.

Use `addReference(String)` to be able to retrieve all venues identifier from the returned PlaceLink (using `getReference(String)`).

The venues identifier can also be retrieved using `addReference(String)` and `getReference(String)`.

This reference name can be used retrieve all the different venues identifiers, namely:

`VENUES_CONTENT_ID_REFERENCE_NAME`, `VENUES_DESTINATION_ID_REFERENCE_NAME` and

`VENUES_VENUE_ID_REFERENCE_NAME`.

See also:

<http://places.api.here.com/places/static/doc/public/#topics/external-references.html>

`addReference(String)`

`getReference(String)`

`addReference(String)`

`getReference(String)`

```
public static final String VENUES_VENUE_ID_REFERENCE_NAME
```

Name used to get only venues.venue identifier references.

Use `addReference(String)` to be able to retrieve the venues.venue identifier from the returned PlaceLink (using `getReference(String)`).

The venues.venue identifier can also be retrieved using `addReference(String)` and `getReference(String)`.

See also:

<http://places.api.here.com/places/static/doc/public/#topics/external-references.html>

`addReference(String)`

`getReference(String)`

`addReference(String)`

`getReference(String)`

Method Details

`public boolean cancel ()`

Cancels any pending results from an invoked request.

Returns:

True if the request was canceled successfully, false otherwise

ResultListener<T>

The interface `ResultListener<T>` is a member of [com.here.android.mpa.search](#).

Type Parameters:

• `T`

Listener data type

Interface Summary

`public abstract interface ResultListener`

Represents an event listener that reports information about the completion of a request.

[For complete information, see the section [Interface Details](#)]

Method Summary

Table 217: Methods in `ResultListener<T>`

Methods
<code>public abstract void onCompleted (T data, ErrorCode error)</code> A callback indicating that a request operation has completed.

Interface Details

Represents an event listener that reports information about the completion of a request.

Method Details

```
public abstract void onCompleted (T data, ErrorCode error)
```

A callback indicating that a request operation has completed.

Parameters:

- **data**
Search results (can be null if no results were found or an error was encountered)
- **error**
An ErrorCode representing an appropriate result

ReverseGeocodeRequest

The class `ReverseGeocodeRequest` is a member of `com.here.android.mpa.search`.

Class Summary

```
public class ReverseGeocodeRequest  
extends com.here.android.mpa.search.Request, java.lang.Object
```

The `ReverseGeocodeRequest` represents an extended Request used to retrieve Address data by way of Geocoder search services.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 218: Constructors in ReverseGeocodeRequest

Constructors
<code>ReverseGeocodeRequest (GeoCoordinate location)</code> Creates a reverse geocoder request that resolves a GeoCoordinate into an Address.

Method Summary

Table 219: Methods in ReverseGeocodeRequest

Methods
<code>public ErrorCode execute (ResultListener<Address> listener)</code> Executes an asynchronous request.

Class Details

The `ReverseGeocodeRequest` represents an extended Request used to retrieve Address data by way of Geocoder search services.

Note: the response to a `ReverseGeocodeRequest` is a single `Address` object.

Constructor Details

`ReverseGeocodeRequest (GeoCoordinate location)`

Creates a reverse geocoder request that resolves a `GeoCoordinate` into an `Address`.

Parameters:

- `location`

A `GeoCoordinate` representing the query location context

Throws:

- `IllegalArgumentException`

Upon a failure to handle the received argument.

Method Details

`public ErrorCode execute (ResultListener<Address> listener)`

Executes an asynchronous request.

Parameters:

- `listener`

A `ResultListener` passed along with the request to monitor progress

Returns:

The `ErrorCode` representing an appropriate result

ReviewMedia

The class `ReviewMedia` is a member of `com.here.android.mpa.search` .

Class Summary

`public class ReviewMedia`

`extends com.here.android.mpa.search.Media, java.lang.Object`

Represents review content about a `Place`.

[For complete information, see the section [Class Details](#)]

See also:

`getReviews()`

Method Summary

Table 220: Methods in ReviewMedia

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public String getDate ()</pre> <p>Gets the date when the user contributed the review.</p>
<pre>public String getDescription ()</pre> <p>Gets the review content for the <i>Place</i>.</p>
<pre>public String getId ()</pre> <p>Get the review identifier.</p>
<pre>public String getIsoLanguageCode ()</pre> <p>Gets the ISO language code identifying the language in which the review is available.</p>
<pre>public double getRating ()</pre> <p>Gets the rating that the contributor of the review gave to the <i>Place</i>.</p>
<pre>public String getTitle ()</pre> <p>Gets the title of the review that the user contributed.</p>
<pre>public UserLink getUser ()</pre> <p>Gets the Link to details about the user who contributed the review.</p>
<pre>public int hashCode ()</pre> <p>For documentation, see java.lang.Object</p>

Class Details

Represents review content about a *Place*. Each individual `Review` contains information about the review itself, the user who contributed the review, and a rating that the user offered for the place.

See also:

[getReviews\(\)](#)

Method Details

`public boolean equals (Object obj)`

For documentation, see [java.lang.Object](#)

Parameters:

- `obj`

`public String getDate ()`

Gets the date when the user contributed the review.

Returns:

The date

```
public String getDescription ()
```

Gets the review content for the *Place*. Depending on the supplier, the full description might not be displayed and the full review might be available only within the resource to which the optional `via` attribute links.

Returns:

The content description

See also:

getVia()

```
public String getId ()
```

Get the review identifier.

Returns:

The review identifier.

```
public String getIsoLanguageCode ()
```

Gets the ISO language code identifying the language in which the review is available.

Note: a language code for a review is optional, so a call to this method could return `null`.

Returns:

The language code (could be `null`).

```
public double getRating ()
```

Gets the rating that the contributor of the review gave to the *Place*.

Returns:

The rating as estimated by the review contributor

See also:

Ratings

```
public String getTitle ()
```

Gets the title of the review that the user contributed.

Note: a title for a review is optional, so a call to this method could return null.

Returns:

The title (could be null).

```
public UserLink getUser ()
```

Gets the Link to details about the user who contributed the review.

Returns:

The user Link

```
public int hashCode ()
```

For documentation, see [java.lang.Object](#)

RichTextFormatting

The enumeration `RichTextFormatting` is a member of [com.here.android.mpa.search](#).

Enumeration Summary

```
public final enumeration RichTextFormatting
```

extends java.lang.Enum, java.lang.Object

Represents values describing possible formats for rich text content.

[For complete information, see the section [Enumeration Details](#)]

See also:

[setRichTextFormatting\(RichTextFormatting\)](#)

[setRichTextFormatting\(RichTextFormatting\)](#)

Enum Constant Summary

Table 221: Enum Constants in RichTextFormatting

Fields
<pre>public static final RichTextFormatting HTML</pre> <p>HTML-encoded text.</p>
<pre>public static final RichTextFormatting PLAIN</pre> <p>Plain text.</p>

Method Summary

Table 222: Methods in RichTextFormatting

Methods
<pre>public static RichTextFormatting valueOf (String name)</pre> <p>This method retrieves the enumeration value that matches the name specified by the caller.</p>
<pre>public static RichTextFormatting[] values ()</pre> <p>This method retrieves an array of constants of the given enum type in the order in which they are declared.</p>

Enumeration Details

Represents values describing possible formats for rich text content.

See also:

[setRichTextFormatting\(RichTextFormatting\)](#)

[setRichTextFormatting\(RichTextFormatting\)](#)

Enum Constant Details

`public static final RichTextFormatting HTML`

HTML-encoded text.

`public static final RichTextFormatting PLAIN`

Plain text.

Method Details

`public static RichTextFormatting valueOf (String name)`

This method retrieves the enumeration value that matches the name specified by the caller.

Parameters:

- `name`

A string containing the name of the enumeration member whose value is to be retrieved.

`public static RichTextFormatting[] values ()`

This method retrieves an array of constants of the given enum type in the order in which they are declared.

SearchRequest

The class `SearchRequest` is a member of `com.here.android.mpa.search`.

Class Summary

```
public class SearchRequest  
extends com.here.android.mpa.search.DiscoveryRequest, com.here.android.mpa.search.Request,  
java.lang.Object
```

The `SearchRequest` processes text string queries based on the user's input to find specific places.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 223: Constructors in `SearchRequest`

Constructors
<code>SearchRequest (String query)</code> SearchRequest constructor

Method Summary

Table 224: Methods in `SearchRequest`

Methods
<code>public ErrorCode execute (ResultListener<DiscoveryResultPage> listener)</code> Executes an asynchronous request.
<code>public SearchRequest setQueryText (String query)</code> Set the search query text.
<code>public SearchRequest setSearchCenter (GeoCoordinate center)</code> Sets a GeoCoordinate representing the location context used to search for results that are appropriate to the <code>query</code> parameter.

Class Details

The `SearchRequest` processes text string queries based on the user's input to find specific places. It answers questions of "what" and "where" for an online search of POI or address.

The results of the `SearchRequest` are sets of places that match a user's search term in a specific location context (such as near a given location, around a user's current position or on the currently visible map).

A search location context must be provided by setting a search center location using `setSearchCenter(GeoCoordinate)` or a bounding map viewport using `setMapViewport(GeoBoundingBox)` or both. Failing to set a location context will result in an `INVALID_PARAMETER` when executing the request.

Constructor Details

SearchRequest (String query)

SearchRequest constructor

Parameters:

- **query**

Query text specifying the kind of places to locate

Method Details

public ErrorCode execute (ResultListener<DiscoveryResultPage> listener)

Executes an asynchronous request.

Parameters:

- **listener**

A ResultListener passed along with the request to monitor progress

Returns:

The ErrorCode representing an appropriate result

public SearchRequest setQueryText (String query)

Set the search query text.

Parameters:

- **query**

Query text specifying the kind of places to locate

Returns:

The SearchRequest

public SearchRequest setSearchCenter (GeoCoordinate center)

Sets a GeoCoordinate representing the location context used to search for results that are appropriate to the query parameter.

Parameters:

- **center**

A GeoCoordinate representing the location context used to search for results that are appropriate to the query parameter.

Returns:

The SearchRequest

SupplierLink

The class *SupplierLink* is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class SupplierLink  
extends com.here.android.mpa.search.Link, java.lang.Object
```

Represents a *SupplierLink* which contains meta-information about a supplier.

[For complete information, see the section [Class Details](#)]

See also:

[getSupplier\(\)](#)
[getSupplier\(\)](#)

Method Summary

Table 225: Methods in SupplierLink

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public String getIconUrl ()</pre> <p>Gets the URL to retrieve the icon for the resource to which the <code>Link</code> refers.</p>
<pre>public String getId ()</pre> <p>Gets the unique identifier for the resource to which the <code>Link</code> refers.</p>
<pre>public String getName ()</pre> <p>Gets the name of the supplier that provided the the <code>Link</code> .</p>
<pre>public String getUrl ()</pre> <p>Gets the String representation of the URL to the supplier's profile</p>
<pre>public int hashCode ()</pre> <p>For documentation, see java.lang.Object</p>

Class Details

Represents a *SupplierLink* which contains meta-information about a supplier.

See also:

[getSupplier\(\)](#)
[getSupplier\(\)](#)

Method Details

```
public boolean equals (Object obj)
```

For documentation, see *java.lang.Object*

Parameters:

- `obj`

```
public String getIconUrl ()
```

Gets the URL to retrieve the icon for the resource to which the `Link` refers.

Note: an icon URL for a linked object is optional, so a call to this method could return `empty`.

Returns:

The icon URL (could be `empty`)

```
public String getId ()
```

Gets the unique identifier for the resource to which the `Link` refers.

Note: an ID for a linked object is optional, so a call to this method could return `empty`.

Returns:

The ID (could be `empty`)

```
public String getName ()
```

Gets the name of the supplier that provided the the `Link`.

Note: a supplier name for a linked object is optional, so a call to this method could return `empty`.

Returns:

The icon URL (could be `empty`)

```
public String getUrl ()
```

Gets the String representation of the URL to the supplier's profile

Returns:

The URL

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

TextAutoSuggestionRequest

The class `TextAutoSuggestionRequest` is a member of `com.here.android.mpa.search`.

Class Summary

```
public class TextAutoSuggestionRequest  
extends com.here.android.mpa.search.Request, java.lang.Object
```

Represents an extended Request used to retrieve a List of search terms by way of Places search services.

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 226: Constructors in `TextAutoSuggestionRequest`

Constructors
<code>TextAutoSuggestionRequest (String partialTerm)</code> Default constructor.

Method Summary

Table 227: Methods in `TextAutoSuggestionRequest`

Methods
<code>public ErrorCode execute (ResultListener<AutoSuggest> listener)</code> Executes an asynchronous request.
<code>public int getCollectionSize ()</code> Gets the current collection size being used for request responses.
<code>public RichTextFormatting getRichTextFormatting ()</code> Gets the current RichTextFormatting type being used in request responses.
<code>public TextAutoSuggestionRequest setCollectionSize (int value)</code> Sets a collection size to be used for request responses.
<code>public TextAutoSuggestionRequest setMapViewport (GeoBoundingBox mapViewport)</code> The map viewport is a bounding box of the map area currently visible to the user.
<code>public TextAutoSuggestionRequest setQueryText (String partialTerm)</code> Set the query partial search term.
<code>public TextAutoSuggestionRequest setRichTextFormatting (RichTextFormatting value)</code> Sets a RichTextFormatting to be used in request responses.
<code>public TextAutoSuggestionRequest setSearchCenter (GeoCoordinate center)</code> Sets the search center.

Class Details

Represents an extended Request used to retrieve a List of search terms by way of Places search services.

A search location context must be provided by setting either a search center using [setSearchCenter\(GeoCoordinate\)](#) or a bounding map viewport using [setMapViewport\(GeoBoundingBox\)](#).

Failing to set a map viewport will result in an [INVALID_PARAMETER](#) when executing the request.

Constructor Details

TextAutoSuggestionRequest (String partialTerm)

Default constructor.

Creates a request to return a list of suggested search terms that are related to a specified location context and a partial search term.

* A search location context must be provided by setting either a search center using [setSearchCenter\(GeoCoordinate\)](#) or a bounding map viewport using [setMapViewport\(GeoBoundingBox\)](#).

Failing to set a map viewport will result in an [INVALID_PARAMETER](#) when executing the request.

Parameters:

- **partialTerm**

Partial term to be autocompleted. Should not be empty or null.

Method Details

public ErrorCode execute (ResultListener<AutoSuggest> listener)

Executes an asynchronous request.

Parameters:

- **listener**

A ResultListener passed along with the request to monitor progress

Returns:

The ErrorCode representing an appropriate result

public int getCollectionSize ()

Gets the current collection size being used for request responses.

Returns:

The current response collection size

public RichTextFormatting getRichTextFormatting ()

Gets the current RichTextFormatting type being used in request responses.

Returns:

The current RichTextFormatting type

```
public TextAutoSuggestionRequest setCollectionSize (int value)
```

Sets a collection size to be used for request responses. The maximum number of result items in each collection will be limited to this value. The valid value range is [1..100]. The default collection size is 20.

Parameters:

- **value**

Desired response collection size per request.

Returns:

This Request object

```
public TextAutoSuggestionRequest setMapViewport (GeoBoundingBox  
mapViewport)
```

The map viewport is a bounding box of the map area currently visible to the user. The viewport can act as an implicit location context in the absence of an explicit location context. To ensure you get the best results possible, you should always set a viewport if there is a map visible to the user.

Parameters:

- **mapViewport**

The bounding box of the map area currently visible.

```
public TextAutoSuggestionRequest setQueryText (String partialTerm)
```

Set the query partial search term.

Parameters:

- **partialTerm**

A partial search term used to create a list of suggested search terms.

Returns:

The TextSuggestionRequest.

```
public TextAutoSuggestionRequest setRichTextFormatting (RichTextFormatting  
value)
```

Sets a RichTextFormatting to be used in request responses. The default formatting is *HTML*.

Parameters:

- **value**

Desired RichTextFormatting

Returns:

This Request object

```
public TextAutoSuggestionRequest setSearchCenter (GeoCoordinate center)
```

Sets the search center.

Parameters:

- **center**

The GeoCoordinate representing the location context used to search for nearby places.

Returns:

The TextSuggestionRequest.

TextSuggestionRequest

The class *TextSuggestionRequest* is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class TextSuggestionRequest
```

```
extends com.here.android.mpa.search.Request, java.lang.Object
```

Represents an extended Request used to retrieve a List of search terms by way of Places search services.

Deprecated: As of SDK 3.3, replaced by [TextAutoSuggestionRequest](#).

[For complete information, see the section [Class Details](#)]

Constructor Summary

Table 228: Constructors in TextSuggestionRequest

Constructors
<code>TextSuggestionRequest (String partialTerm)</code> Default constructor.

Method Summary

Table 229: Methods in TextSuggestionRequest

Methods
<code>public ErrorCode execute (ResultListener<String> listener)</code> Executes an asynchronous request.

Methods

```
public int getCollectionSize ()
```

Gets the current collection size being used for request responses.

```
public RichTextFormatting getRichTextFormatting ()
```

Gets the current RichTextFormatting type being used in request responses.

```
public TextSuggestionRequest setCollectionSize (int value)
```

Sets a collection size to be used for request responses.

```
public TextSuggestionRequest setMapViewport (GeoBoundingBox mapViewport)
```

The map viewport is a bounding box of the map area currently visible to the user.

```
public TextSuggestionRequest setQueryText (String partialTerm)
```

Set the query partial search term.

```
public TextSuggestionRequest setRichTextFormatting (RichTextFormatting value)
```

Sets a RichTextFormatting to be used in request responses.

```
public TextSuggestionRequest setSearchCenter (GeoCoordinate center)
```

Sets the search center.

Class Details

Deprecated: As of SDK 3.3, replaced by [TextAutoSuggestionRequest](#).

Represents an extended Request used to retrieve a List of search terms by way of Places search services.

A search location context must be provided by setting either a search center using [setSearchCenter\(GeoCoordinate\)](#) or a bounding map viewport using [setMapViewport\(GeoBoundingBox\)](#). Failing to set a map viewport will result in an [INVALID_PARAMETER](#) when executing the request.

Constructor Details

TextSuggestionRequest (String partialTerm)

Default constructor.

Creates a request to return a list of suggested search terms that are related to a specified location context and a partial search term.

A search location context must be provided by setting either a search center using [setSearchCenter\(GeoCoordinate\)](#) or a bounding map viewport using [setMapViewport\(GeoBoundingBox\)](#). Failing to set a map viewport will result in an [INVALID_PARAMETER](#) when executing the request.

Parameters:

- **partialTerm**

Method Details

```
public ErrorCode execute (ResultListener<String> listener)
```

Executes an asynchronous request.

Parameters:

- **listener**

A ResultListener passed along with the request to monitor progress

Returns:

The ErrorCode representing an appropriate result

```
public int getCollectionSize ()
```

Gets the current collection size being used for request responses.

Returns:

The current response collection size

```
public RichTextFormatting getRichTextFormatting ()
```

Gets the current RichTextFormatting type being used in request responses.

Returns:

The current RichTextFormatting type

```
public TextSuggestionRequest setCollectionSize (int value)
```

Sets a collection size to be used for request responses. The maximum number of result items in each collection will be limited to this value. The valid value range is [1..100]. The default collection size is 20.

Parameters:

- **value**

Desired response collection size per request.

Returns:

This TextSuggestionRequest object

```
public TextSuggestionRequest setMapViewport (GeoBoundingBox mapViewport)
```

The map viewport is a bounding box of the map area currently visible to the user. The viewport can act as an implicit location context in the absence of an explicit location context. To ensure you get the best results possible, you should always set a viewport if there is a map visible to the user.

Parameters:

- **mapViewport**

The bounding box of the map area currently visible.

```
public TextSuggestionRequest setQueryText (String partialTerm)
```

Set the query partial search term.

Parameters:

- **partialTerm**

A partial search term used to create a list of suggested search terms.

Returns:

The TextSuggestionRequest.

```
public TextSuggestionRequest setRichTextFormatting (RichTextFormatting value)
```

Sets a RichTextFormatting to be used in request responses. The default formatting is [HTML](#).

Parameters:

- **value**

Desired RichTextFormatting

Returns:

This TextSuggestionRequest object

```
public TextSuggestionRequest setSearchCenter (GeoCoordinate center)
```

Sets the search center.

Parameters:

- **center**

The GeoCoordinate representing the location context used to search for nearby places.

Returns:

The TextSuggestionRequest.

UserLink

The class *UserLink* is a member of [com.here.android.mpa.search](#) .

Class Summary

```
public class UserLink
```

`extends com.here.android.mpa.search.Link, java.lang.Object`

Represents a [UserLink](#) which contains additional attributes to describe a user.

[For complete information, see the section [Class Details](#)]

See also:

[getUser\(\)](#)

[getUser\(\)](#)

Method Summary

Table 230: Methods in UserLink

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see java.lang.Object</p>
<pre>public String getName ()</pre> <p>Gets the name of the user that provided the the Link .</p>
<pre>public String getUrl ()</pre> <p>Gets the String representation of the URL to the user's profile</p>
<pre>public int hashCode ()</pre> <p>For documentation, see java.lang.Object</p>

Class Details

Represents a [UserLink](#) which contains additional attributes to describe a user.

See also:

[getUser\(\)](#)

[getUser\(\)](#)

Method Details

`public boolean equals (Object obj)`

For documentation, see [java.lang.Object](#)

Parameters:

- `obj`

`public String getName ()`

Gets the name of the user that provided the the Link .

Note: a user name for a linked object is optional, so a call to this method could return empty .

Returns:

The icon URL (could be empty)

```
public String getUrl ()
```

Gets the String representation of the URL to the user's profile

Returns:

The URL

```
public int hashCode ()
```

For documentation, see *java.lang.Object*

ViaLink

The class *ViaLink* is a member of [com.here.android.mpa.search](#).

Class Summary

```
public class ViaLink
```

```
extends com.here.android.mpa.search.Link, java.lang.Object
```

Represents a *ViaLink* to an external website of the supplier of content.

[For complete information, see the section [Class Details](#)]

See also:

[getVia\(\)](#)

Method Summary

Table 231: Methods in *ViaLink*

Methods
<pre>public boolean equals (Object obj)</pre> <p>For documentation, see <i>java.lang.Object</i></p>
<pre>public String getUrl ()</pre> <p>Gets the String representation of the URL to an external website</p>
<pre>public int hashCode ()</pre> <p>For documentation, see <i>java.lang.Object</i></p>

Class Details

Represents a [ViaLink](#) to an external website of the supplier of content.

See also:

[getVia\(\)](#)

Method Details

```
public boolean equals (Object obj)
```

For documentation, see *java.lang.Object*

Parameters:

- **obj**

```
public String getUrl ()
```

Gets the String representation of the URL to an external website

Returns:

The URL

```
public int hashCode ()
```

For documentation, see *java.lang.Object*