

# HERE Android SDK

## Release Notes

Premium Edition Version 3.0.1

The logo consists of the word "here" in a bold, blue, lowercase sans-serif font, rotated diagonally counter-clockwise.

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## Document Information

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### Document

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## Overview

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The HERE Android SDK offers APIs to enable developers to access HERE location-based assets and bring a rich and immersive location experience to their applications with beautiful and accurate maps, a global database of Places and a world-class routing capability. The powerful client-side HERE APIs for Android include a sophisticated engine for rendering map data and route calculation. In addition to downloading map data dynamically as needed, it also supports offline maps through use of previously cached map data or previously downloaded map packages.

The scope of this document is to provide the release notes of the HERE Android SDK, with respect to a particular release version. It also includes the issues reported, open and solved within this release.

## Target Audience

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This document is targeted at the developers who are already familiar with Android app development. Readers should have some experience using Eclipse and Java.

## Release Content

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<b>Native APIs</b>	Enabling native applications to leverage HERE functionality
<b>Hybrid Engine</b>	Engine responsible for rendering vector map data
<b>Documentation</b>	API Reference Documentation and Developer Guide
<b>Sample Applications / Code</b>	One or more sample applications

## Package Description

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HERE Android SDK Premium Edition v3.0.1 Release Notes.pdf	This document
Here-sdk.zip	HERE Android SDK
HERE-sdk.zip/apk/mapsdemo-ext-release.apk	Reference maps application using the HERE Android SDK
HERE-sdk.zip/libs	Native and Java libraries
HERE-sdk.zip/libs/docs	API Reference documentation
HERE-sdk.zip/tutorial	Sample applications to be used with the Quick Start section in the Developer's Guide
HERE-sdk.zip/user-guide/HERE Android SDK Premium Edition v3.0.1 Developer's Guide.pdf	HERE Android SDK Developer's Guide

Evaluation releases of the HERE Android SDK also include the following:

HERE-sdk.zip/apk/maploader-release.apk	On-device map loader application enabling download of maps for offline usage
HERE-sdk.zip/misc/	Contains a sample Voice Skin file to be used with the Voice Navigation feature

- ☰ **Note:** Evaluation releases can only be used for a limited time. If the evaluation expiry date is within the next 30 days, a warning message is displayed on the map. For more information about the SDK evaluation period, please contact your HERE representative.



# Features Overview

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

## Mapping:

- Dynamically download vector maps for more than 190 countries in over 50 languages
- Preload maps for offline usage
- Map styles: normal street map, satellite map, transit map, and more
- Textured 3D landmarks
- Street-level imagery
- Touch gestures (including rotate, tilt, pan, flick, and pinch zoom)
- Overlay objects on the map such as polylines, polygons, icons, and routes
- Overlay 3D map objects
- 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
- Venue maps
- Show real-time traffic flow and incidents
- 3D Extruded Buildings
- Transit object interaction
- Traffic object interaction

## Search:

- Search through a broad set of geographical content, including 25 million streets, 200 million address points, and over 60 million categorized places across the globe
- Search for a specific place or explore by categories
- Get rich details for a Point of Interest (including images, ratings, reviews, and editorials)
- Perform Geocoding and Reverse Geocoding lookups
- Offline Places search, Geocoding, Reverse Geocoding

## Directions:

- Get driving or pedestrian directions
- Public Transit directions for more than 950 cities in 44 countries
- Public Transit directions using online timetables for more than 400 cities
- Specify preferred route type (fastest/shortest) and attributes to avoid (toll roads, motorways, parks, and more)
- Alternate routes

- Offline route calculation
- Driving directions that take traffic into account
- Directions for commercial vehicles

### Turn-by-turn Navigation\*:

- Online and offline turn-by-turn navigation
- Natural-sounding guidance instructions, such as "turn left at the gas station" and "at the next light, turn right"
- Approximate user coordinates to the nearest road or navigation route
- Approximate user tunnel position, even when there is no GPS signal
- Dynamic information including signposts, the driver's current street lane, and speed
- Realistic previews of certain junctions and lanes
- Navigation voices in a variety of languages. For a list of the available languages, see the Developer's Guide.

📖 **Note: [Important]** Application developers using the Turn-by-turn Guidance APIs are required to thoroughly test their applications in all expected usage scenarios to ensure safe and correct behavior. Application developers are responsible for warning their users of the following obligations:

1. Do not follow instructions that may lead to an unsafe or illegal situation
2. Obey all local laws.
3. Be aware that using a mobile phone or some of its features while driving may be prohibited.
4. Always keep hands free to operate the vehicle while driving.
5. The first priority while driving should be road safety.

### LiveSight:

- Track the position of a device in space and animate view accordingly
- Seamless transitions from Map to LiveSight and back again
- Gesture support allows the user to interact with content, custom gestures can also be defined
- Content transitions and interaction are animated using hardware acceleration
- "Radar" UI support, which provides the user with more context regarding their position relative to content
- Highly configurable LiveSight engine allows the user experience to be customized

### Other Features:

- Custom Location search by using location attributes, proximity, area, or corridor radius
- Visual information for fleet vehicles and trucks
- Congestion toll zones and the typical traffic patterns for a given time of the week

- Map Marker Clusters

## Getting Started

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Please refer to the documentation under the `HERE-sdk.zip/user-guide/` folder for details on how to start using the HERE Android SDK.

## New Features

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### HERE SDK 3.0.1

- We added support for Android M.
- We reduced the map coverage of Mainland China.
- We expanded the support of automatic geopolitical maps.

### HERE SDK 3.0

- We enabled access to SDK packages based on license keys.
- We added 3D Venue Maps.
- We added the following enhancements to LiveSight:
  - Pedestrian Guidance
  - Support for external sensor data
  - Support for 3D objects
- We added improvements to audio session management and the ability to integrate SDK voice navigation with TTS engines used in customer applications.
- We added marker clustering.
- We added the ability to retrieve point of interest information from a tapped cartographic POI.
- We added native rendering for truck attributes, fleet maps, environmental zones.

# API Changes, Fixed Issues, and Improvements

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## Version 3.0.1

- Improved the smoothness of zoom transitions in drive mode.
- Fixed an issue where map details in China remain even at a high zoom level.

### `com.here.android.mpa.venues3d`

- `VenueMapFragment`
  - Added the `init(OnEngineInitListener, VenueServiceListener)` and the `init(Context, OnEngineInitListener, VenueServiceListener)` methods. These methods are recommended, as the `VenueServiceListener` provides a callback that returns the venue service initialization status.

## Version 3.0

### `com.here.android.mpa.ar`

- `ARBillboardObject`
  - Added this new class to represent a 3D AR billboard objects that users can add to an `ARController`.
- `ARBuildingInfo`
  - Added this new class to encapsulate information about a building on the map .
- `ARController`
  - Added `addOnProjectionCameraUpdatedListener(ARController.OnProjectionCameraUpdatedListener listener)` and `removeOnProjectionCameraUpdatedListener(ARController.OnProjectionCameraUpdatedListener)` to add and remove an `OnProjectionCameraUpdatedListener` to the `ARController` to listen for livesight projection camera change notification.
  - Added `geoTo3dPosition(GeoCoordinate, Vector3f)` to convert a geo position into a 3d space position.
  - Added `getCompassAccuracy()` and `setCompassAccuracy(float)` to get and set compass accuracy in degrees.
  - Added `getFixedAltitude()` and `setFixedAltitude(float, boolean)` to get and set fixed altitude of the LiveSight's view point.
  - Added `getPosition(AtomicBoolean)` to Get the last known position with map matching indicator.
  - Added `pixelTo3dPosition(float, PointF, Vector3f)` to convert a screen point into a 3d space position.

- Added `setMapAsPoseReadingSource(boolean)` and `isMapAsPoseReadingSource()` to set and get the status if a `Map` object is used as a source of `PoseReading`.
- Deprecated `setScreenViewPoint(PointF, boolean)`, use `DownViewParams.setTransformCenter(PointF, boolean)` instead.
- `ARMeshObject`  
Added to represent a concrete 3D AR model objects with mesh.
- `ARModelObject`  
Added to represent a base class for all 3D AR objects that users can add to a `ARController`.
- `ARObject`
  - Added `getBoundingBox()` to get bounding box limiting where the `ARObject` can travel on screen.
  - Added `getIcon(IconType)` to get the icon image, replacing the deprecated methods: `getBackIcon`, `getDownIcon`, `getFrontIcon`, and `getInfoIcon`.
  - Added `setIcon(...)` to set the icon image, replacing the deprecated methods: `setBackIcon`, `setDownIcon`, `setFrontIcon`, and `setInfoIcon`.
  - Added `getIconAnchor(IconType)` and `setIconAnchor(IconType, android.graphics.PointF)` to get and set icon's anchor point.
  - Added `getIconSizeScale(IconType)` to get icon's size scaling factor replacing the deprecated methods: `getBackIconSizeScale`, `getDownIconSizeScale`, `getFrontIconSizeScale`, and `getInfoIconSizeScale`.
  - Added `setIconSizeScale(IconType, float)` to set icon's size scaling factor replacing the deprecated methods: `setBackIconSizeScale`, `setDownIconSizeScale`, `setFrontIconSizeScale`, and `setInfoIconSizeScale`.
  - Added `setIconTexture(IconType, int, int, int)` to set an OpenGL texture name for the specified icon in the `ARObject`, replacing the deprecated methods: `setBackIconTexture`, `setDownIconTexture`, `setFrontIconTexture`, and `setInfoIconTexture`.
  - Added `getMaxViewAngle()` and `setMaxViewAngle(float)` to get and set item max view angle when the item is on the right or left from line of sight.

**com.here.android.mpa.common**

- `GeoBoundingBox`
  - Added new static API `mergeBoxes(List<GeoBoundingBox>)`.
  - Deprecated `merge(List<GeoBoundingBox>)`, use `mergeBoxes(List<GeoBoundingBox>)` instead.
- `MapEngine`
  - Deprecated `getInstance(Context)`, use `getInstance()` instead.
  - Deprecated `init(OnEngineInitListener)`, use `init(Context, OnEngineInitListener)` instead.
  - Added `isOnlineEnabled()` to get the online configuration state of `MapEngine`.
  - Added `setOnline(boolean)` to alter the data connectivity mode of the `MapEngine`.

- enum value `OnEngineInitListener.Error.INCORRECT_PASSPHRASE` deprecated as it's obsolete.
- `PositionManager`
  - Added `getLastKnownLocation()` to allow client to get cached location if no device position is available.
- `RoadElement`
  - Added `getStaticSpeed()` to return free-flow speeds. This does not include dynamic events, for instance, no traffic even if enabled.
  - Added `getDefaultSpeed()` to return default speed of the road element. It uses the same speeds used during routing, and it includes dynamic events, for instance, traffic events if traffic is enabled.
  - Deprecated `getAverageSpeed()`, use `getDefaultSpeed()` instead.
- `Image`
  - Added `getBitmap(int, int)` to return a `Bitmap` object converted from a SVG-sourced `Image` object.
  - Deprecated `getBitmapImage(int, int)`, use `getBitmap(int, int)` instead.

#### **com.here.android.mpa.cluster**

- `ClusterDensityRange`
  - Added this new class to represent a range of cluster densities.
- `ClusterLayer`
  - Added this new class as a container for `MapMarkers` before clustering can begin.
- `ClusterStyle`
  - Added this new class to customize the look of the cluster icon used for a specific density (range).
- `ClusterTheme`
  - Added this new class to map cluster density ranges to cluster icon styles.
- `ClusterViewObject`
  - Added this new class to represent a visual manifestation of a marker cluster.
- `BasicClusterStyle`
  - Added this new class to implement basic `ClusterStyle`.
- `ImageClusterStyle`
  - Added this new class to implement a cluster style that uses an `Image`.

#### **com.here.android.mpa.guidance**

- `AudioPlayerDelegate`
  - Added this new class as an interface which clients can implement to take over playback of audio files and TTS text strings.
- `EnhancedRoadLane`



- Added this new class to describe enhanced information for a single road lane.
- `NavigationManager`
  - **Deprecated** `setAudioFlags(EnumSet<AudioEvent>)`, use `setEnabledAudioEvents(EnumSet<AudioEvent>)` instead.
  - **Deprecated** `getAudioFlags()`, use `setEnabledAudioEvents()` instead.
  - **Deprecated** enum `MapUpdateMode.OVERVIEW`. This enumeration is no longer used.
  - **Added** `getCountryCode()` to expose country code string when guidance is active.
- `NavigationManager.NavigationManagerEventListener`
  - **Added** `onCountryInfo(final String, final String)` callback to receive notification when country is changed.
- `NavigationManager.LaneInfoListener`
  - **Added** `onEnhancedLaneInfo(final List<EnhancedRoadLane>)` callback to receive notification for `EnhancedRoadLane` events.
- `VoicePackage`
  - **Deprecated** `getVersion()`. Please check `VoiceSkin.getVersion()` after successful download and installation for the `VoicePackage`.
  - **Added** `getLocalizedQuality()` to get the localized description of the voice skin quality.
  - **Deprecated** `Type`, use `TravelMode` instead.
  - **Deprecated** `getType()`, use `getTravelMode()` instead.
- `TrafficWarner`
  - **Deprecated** `setAskAvoidOutput(TrafficNotification)` due to lack of use.
  - **Deprecated** `setInformAvoidOutput(TrafficNotification)` due to lack of use.

### **com.here.android.mpa.mapping**

- `CongestionRasterTileSource`
  - **Deprecated** this class, use `Map.setFleetFeatureVisible(EnumSet)` instead.
- `FleetMapRasterTileSource`
  - **Deprecated** this class, use `Map.setMapScheme(Map.Scheme.TRUCK_DAY)` instead.
- `TruckRestrictionsRasterTileSource`
  - **Deprecated** this class, use `Map.setFleetFeatureVisible(EnumSet)` instead.
- `LocalMesh`
  - **Added** `getVertices()` to get a `FloatBuffer` representing a list of vertices associated with the `LocalMesh`.
- `Map`
  - **Added** `setFleetFeaturesVisible(EnumSet<FleetFeature>)` to set a set of fleet features to be visible.
  - **Added** `getFleetFeaturesVisible()` to get the set of fleet features visible.
  - **Added** `addClusterLayer(ClusterLayer)` to attach a cluster layer to the map.
  - **Added** `removeClusterLayer(ClusterLayer)` to detach a cluster layer from the map.

- Added `setVisibleLayers(Enumset<LayerCategory>, boolean)` to toggle the visibility of the map layer categories to be rendered.
- Added `getVisibleLayers()` to get the set of Map layers being rendered.
- **Deprecated** `setDisplayLayers(EnumSet<Layer>)`, use `setVisibleLayers(EnumSet, boolean)` instead. Calling `setDisplayLayers(EnumSet<Layer>)` does not do anything.
- **Deprecated** `getDisplayLayers()`, use `getVisibleLayers()` instead.
- **Deprecated** `setVenueMapTilesVisible(boolean)`, `areVenueMapTilesVisible()`, `setVenueMapFloor(int)`, `getVenueMapFloor()`, `setVenueMapHiddenZoomRange(int, int)` as 2D Venue Map feature is **deprecated** (`com.here.android.mpa.venuemaps`) replaced by 3D Venue Maps (`com.here.android.mpa.venue3d`).
- `Map.Projection`
  - **Removed support for** `EQUIRECTANGULAR`. Calling `Map.setProjectionMode(Projection)` with this enum value results in `IllegalArgumentException` being thrown.
- `Map.Scheme`
  - Added `FleetFeature` enumeration to represent a list of fleet features to be rendered on the map.
  - Added `TRUCK_DAY` enumeration to represent truck scheme in “day” colors.
  - Added `TRUCK_NIGHT` enumeration to represent truck scheme in “night” colors.
  - Added `TRUCK_HYBRID_DAY` enumeration to represent satellite tile scheme in “day” colors with truck related attributes.
  - Added `TRUCK_HYBRID_NIGHT` enumeration to represent satellite tile scheme in “night” colors with truck related attributes.
- `Map.Layer`
  - **Deprecated** this enumeration, use `LayerCategory` instead.
  - **Deprecated** `TRAFFIC`, use `Map#setTrafficInfoVisible(boolean)` directly to toggle visibility.
  - **Deprecated** `STREET_LEVEL_COVERAGE`, use `Map#setStreetLevelCoverageVisible(boolean)` directly to toggle visibility.
- `MapObject`
  - Added `setVisibleMask(int)` to set the visibility bit mask of `MapObject`.
  - Added `unsetVisibleMask(int)` to unset the visibility bit mask of `MapObject`.
  - Added `setVisibleMask(int, int)` to set the visibility bit mask of `MapObject` for the specified range of zoom levels.
  - Added `unsetVisibleMask(int, int)` to unset the visibility bit mask of `MapObject` for the specified range of zoom levels.
  - Added `resetVisibleMask(boolean)` to reset the visibility bit mask of `MapObject` to be either 1s or 0s.
  - Added `getVisibleMask()` to retrieve the visibility bit mask of `MapObject`.

- **Deprecated** `setVisible(int, boolean)`, use `setVisibleMask(int)` and `unsetVisibleMask(int)` instead.
- `MapObject` constructor is no longer accessible and extension of this class is no longer possible.
- `MapProxyObject.Type`
  - **Added** `CLUSTER_MARKER` to represent a `ClusterViewObject`.

### **com.here.android.mpa.odml**

- `MapLoader`
  - **Added** `ResultCode.FATAL_ERROR` enumeration to indicate an error has occurred which requires process restart for `MapLoader` to work.

### **com.here.android.mpa.routing**

- `Maneuver`
  - `Maneuver` constructor is no longer accessible and extension of this class is no longer possible.
- `RouteManager`
  - **Deprecated** `Error.PT_ROUTING_UNAVAILABLE` enumeration, replaced by `OPERATION_NOT_ALLOWED` instead.

### **com.here.android.mpa.search**

- `AroundRequest`
  - **Added** this class to represent sets of places within a specific location context, usually the location of the user. This is intended to provide places that are likely to be visible to the user as well as important places that are further away.
- `DiscoveryRequest`
  - **Added** `addImageDimensions(int, int)` to request image media with specific dimensions.
- `DiscoveryResult`
  - **Deprecated** `getUrl()`, use `PlaceLink.getDetailsRequest()` instead.
- `ErrorCode`
  - **Added** `OPERATION_NOT_ALLOWED` to report situation where the required permission to use Offline Place Search, Offline Category Search, Offline Geocoding or Offline Reverse Geocoding is missing.
- `GeocodeRequest`
  - **Deprecated** `GeocodeRequest(Address)`, use `GeocodeRequest(String)` instead.
- `HereRequest`
  - **Added** `addBuildingFilter(Identifier)` and `addBuildingFilter(String)` to add a search filter based on building identifier.
- `Place`

- Added `getAlternativeReferenceIds()` to get a list of alternative identifiers of the same reference identifier for a specific domain.
- Added `getResidingVenue()` to get the venue (if available) where the `Place` resides.
- `PlaceLink`
  - Added `getAlternativeReferenceIds(String)` to get a list of alternative identifiers of the same reference identifier for a specific domain.
- `PlaceRequest`
  - Added this class to extend `Request`, used to retrieve a `Place` object by way of `Places` search services.
- `Request`
  - Deprecated `getRichTextFormatting()`. This method is only visible in the extended requests that support it.
  - Deprecated `setRichTextFormatting(RichTextFormatting)`. This method is only visible in the extended requests that support it.
  - Deprecated `getCollectionSize()`. This method is only visible in the extended requests that support it.
  - Deprecated `setCollectionSize(int)`. This method is only visible in the extended requests that support it.
  - Deprecated `addReference(string)`. This method is only visible in the extended requests that support it.
  - Deprecated `getReference()`. This method is only visible in the extended requests that support it.
  - Deprecated `setMapViewport(GeoBoundingBox)`. This method is only visible in the extended requests that support it.

#### **com.here.android.mpa.streetlevel**

- `StreetLevelIconBase`
  - `StreetLevelIconBase` constructor is no longer accessible and extension of this class is no longer possible.
- `StreetLevelObject`
  - `StreetLevelObject` constructor is no longer accessible and extension of this class is no longer possible.
- `StreetLevelProxyObject`
  - `StreetLevelProxyObject` constructor is no longer accessible and extension of this class is no longer possible.

#### **com.here.android.mpa.venueMaps**

- Deprecated `VenueMaps` feature, use `Venue 3D` feature (`com.here.android.mpa.venues3d`) instead.

## System Requirements

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- Android Ice Cream Sandwich (Android 4.0/4.0.4, API Level 14) or higher as the application Minimum API Level (`android:minSdkVersion`).
- 60MB of memory (RAM) be made available for foreground applications using the HERE SDK
- For storage of application binaries, an additional ~20MB 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, 50MB of free space is required to be available for map data

## Known Issues

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Devices using MediaTek MT65XX family have a known GPU shader error where the rendering of extruded buildings causes flickers of random colors. It is advised to turn off extruded building rendering on these devices. For more information, see `com.here.android.mpa.mapping.Map#setExtrudedBuildingsVisible(false)`.

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hwcryptoohook.h
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 * ModExp / RSA (with/without KM) plugin API
 *
 * The application will load a dynamic library which
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 *
 * This set of entrypoints provides only a multithreaded,
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\*\*\*\*\*  
 \* Agg 2.4  
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 \* Lua  
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* Opentype Harfbuzz 0.9.16
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*****
* Clipper 6.2
*****

/*****
*
* Author      : Angus Johnson
* Version     : 6.2.0
*
*****

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* The code in this library is an extension of Bala Vatti's clipping algorithm: *
* "A generic solution to polygon clipping" *
* Communications of the ACM, Vol 35, Issue 7 (July 1992) pp 56-63. *
* http://portal.acm.org/citation.cfm?id=129906 *
* *
* Computer graphics and geometric modeling: implementation and algorithms *
* By Max K. Agoston *
* Springer; 1 edition (January 4, 2005) *
* http://books.google.com/books?q=vatti+clipping+agoston *
* *
* See also: *
* "Polygon Offsetting by Computing Winding Numbers" *
* Paper no. DETC2005-85513 pp. 565-575 *
* ASME 2005 International Design Engineering Technical Conferences *
* and Computers and Information in Engineering Conference (IDETC/CIE2005) *
* September 24-28, 2005 , Long Beach, California, USA *
* http://www.me.berkeley.edu/~mcmains/pubs/DAC05OffsetPolygon.pdf *
* *
*****/
/*****
*
* This is a translation of the Delphi Clipper library and the naming style *
* used has retained a Delphi flavour. *
* *
*****/
```