

Indoor Radio Mapper

User Guide

Version 4.1

here

Important Information

Notices

Topics:

- [Legal Notices](#)
- [Document Information](#)

This section contains document notices.

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Chapter 1

Introduction

Topics:

- [What is the HERE Indoor ...](#)

This document provides information on how to use HERE Indoor Radio Mapper to

- view HERE Venue Maps and your own custom maps
- collect radio data inside and outside of venues
- manage and publish the radio data
- test indoor positioning performance at the venue

What is the HERE Indoor Radio Mapper?

The HERE Indoor Radio Mapper is an Android-based tool for collecting geo-referenced radio data on the signal strengths of WiFi access points or Bluetooth beacons inside buildings. Moreover, the tool allows collecting radio data also in the vicinity of the venue to support smooth indoor-outdoor transitions.

To use this tool, you need to have a map of your venue (either the HERE Venue Map or a custom image-based map of your own) and WiFi access points or Bluetooth beacons installed in your building. As soon as you meet these preconditions and have signed up for HERE Indoor Positioning (evaluation or commercial deal), you can use this application to collect the radio data. This enables the developers to use the HERE Mobile SDK (Android or iOS) to create applications that are location-aware even inside buildings.

For a full description of the related concepts and the entire ecosystem, see the HERE Indoor Positioning Installation Guide. The same document also instructs, how to install and configure the Bluetooth beacons as well as how to test the system end-to-end.

Chapter 2

Getting Started

Topics:

- [Requirements](#)
- [Installing the Indoor Radi...](#)
- [Logging In](#)

This section contains information on the requirements for using the HERE Indoor Radio Mapper, installation, and logging in.

Requirements

This section lists requirements for the current version of the HERE Indoor Radio Mapper:


- You need a device running Android version 5.0 (API level 21) up to 7.0 to install the HERE Indoor Radio Mapper. For further information on the devices recommended for radio data collection, see the HERE Indoor Positioning Installation Guide.
- The main criteria for a high-quality measurement device is the support for dual-band WiFi, i.e. compatible with 2.4-GHz and 5-GHz WiFi bands, and a Bluetooth radio. Other quality criteria include high radio scanning rate (e.g. once per two seconds for WiFi), high sensitivity and accuracy of signal strength measurements as well as low noise.
- Bluetooth-based positioning requires that you configure Bluetooth beacons to function either as Google Eddystones or as Apple iBeacons. For more information, see the HERE Indoor Positioning Installation Guide.

Installing the Indoor Radio Mapper

The HERE Indoor Radio Mapper delivery contains the following components:

- HERE Indoor Radio Mapper User Guide (this document)
- `here_indoor_radio_mapper-4.1.apk` application package file
- HERE Indoor Radio Mapper Release Notes

Install the application either by sending the `.apk` file as an e-mail attachment to your device or by copying the `.apk` file to your device.

 **Note:** Make sure your device does not block installations from sources other than the Google Play store. In the settings, you can allow the installation from an unknown source for this single installation.

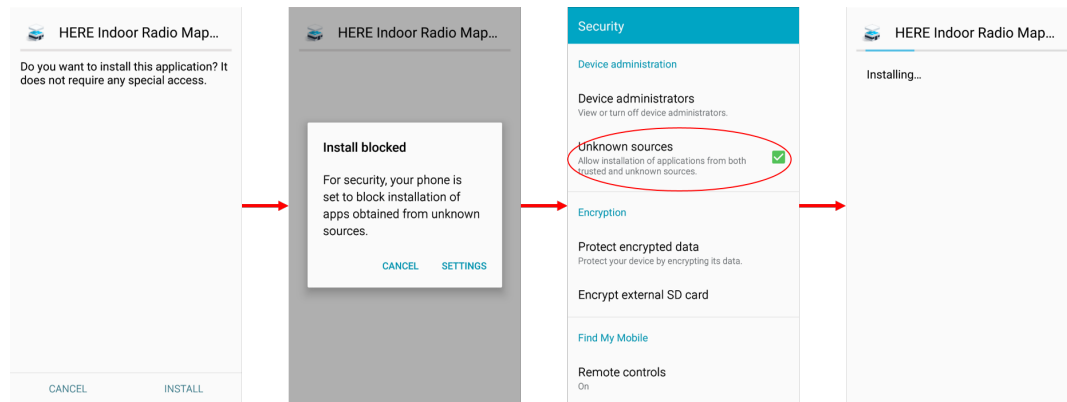
Installing via E-mail

To install the Indoor Radio Mapper via email:

1. Send the `here_indoor_radio_mapper-4.1.apk` application package file as an attachment to your e-mail address.
2. Open the email in your Android device e-mail application and download the attachment. Follow the instructions in the package installer.

The following set of screenshots shows an exemplary installation flow with the pop-up notifying about an unknown installation source.

Figure 1: Installation flow



Installing by copying

To install the HERE Indoor Radio Mapper by copying the .apk file to the device file system:

1. If your mobile device does not have a file manager application, select one from Google Play and install it.
2. To transfer the files, connect the device with a USB cable to your computer:
 - Windows requires the correct Android device driver and installs it automatically when a device is connected. After the successful installation, the Android device's internal storage appears in the Windows Explorer.
 - On a Mac, use the File Transfer application to transfer files: <http://www.android.com/filetransfer/>.
 - On Linux, use the Android ADB (Android Debug Bridge) tool, for example, or applications supporting MTP (Media Transfer Protocol) to transfer the file.
3. Copy the `here_indoor_radio_mapper-4.1.apk` file to a folder on the device.
4. Open the file manager or the installer application, find the .apk file and install the application.

Logging In

To log into the HERE Indoor Radio Mapper, you must have HERE Account credentials. If you do not already have the HERE Account credentials, fill in the form at <https://developer.here.com/authenticationpage>.

- **Note:** If you collect data under one login, that radio data is not available for another, different HERE Account. For example, if you are logged in as the Person A, then the Person B with a different account cannot see the radio data collected by the Person A. If you are working as part of a team, you must use a joint account (e.g. your company account).

Before logging into the application, make sure your device is connected to a data network.

To log into the HERE Indoor Radio Mapper:

1. Launch the HERE Indoor Radio Mapper.
2. In the **Login** view, enter your HERE Account credentials.

Your credentials are checked and the **Landing** view appears.

Chapter 3

Navigating in the Indoor Radio Mapper

Topics:

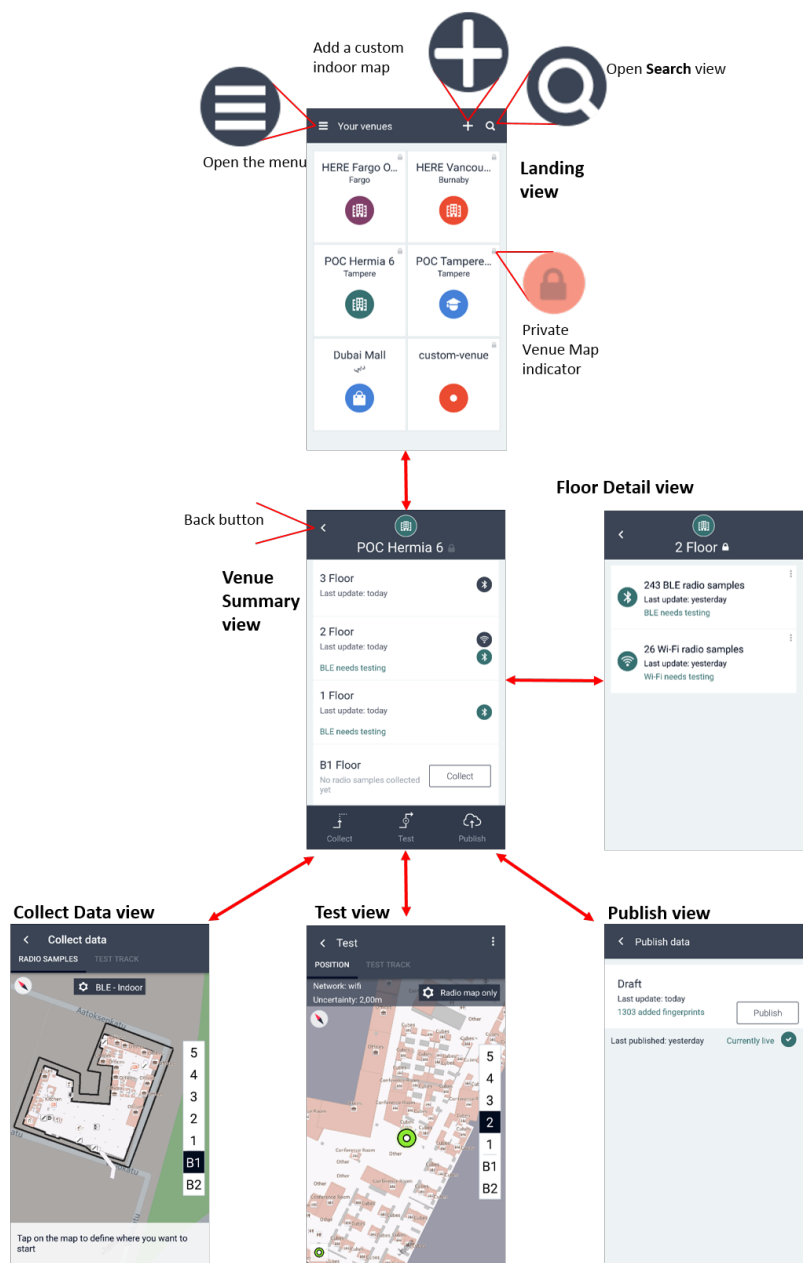
- [Basic Navigation](#)
- [Selecting and Managing Ven...](#)
- [Selecting and Managing Act...](#)

This section provides an overview on navigating in the HERE Indoor Radio Mapper and other basic functions.

Basic Navigation

The HERE Indoor Radio Mapper has three levels of views, as indicated by the figure below.

Figure 2: Navigating between Views



The levels are as follows:

- Top Level – **Landing** view

This view shows any Private HERE Venue maps that have been associated with your account and any custom image-based indoor maps that you have imported yourself. Moreover, the view shows the recently accessed Public HERE Venue Maps.

For more information, see [Selecting and Managing Venues](#) on page 16.

- Second Level – venue **Summary** view

Once you have selected a venue in the **Landing** view, you can then select the action you wish to perform from this view.

For more information, see [Selecting and Managing Activities](#) on page 17.

- Third Level – **Floor Detail**, **Collect**, **Test** and **Publish** views

For more information, see [Managing Data](#) on page 31, [Collecting Radio Data](#) on page 23, [Testing Positioning Performance](#) on page 34 and [Publishing Radio Data](#) on page 38.

Basic operations include:

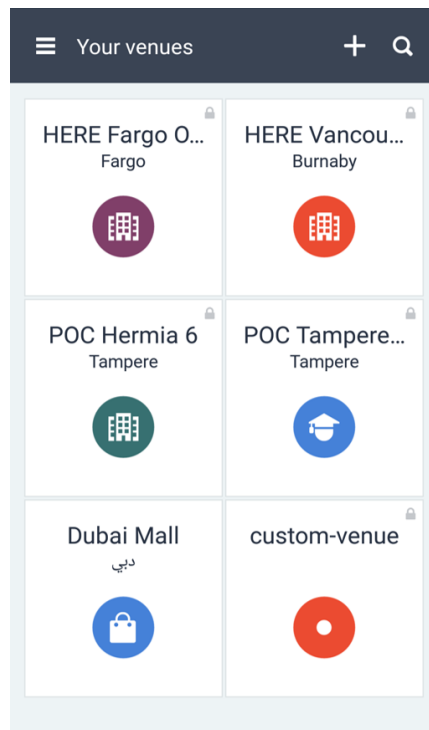
- To log out, open the **menu** in the **Landing** view and select **Log out**
- To manage your settings, open the **menu** in the **Landing** view and select **Settings**. The important items in the **Settings** are:
 - *Product key* - this is reserved for special purposes
 - *Clear recent venues* - clears the Public HERE Venue Maps and custom maps from the **Landing** view
 - *Units* - switch between metric, Imperial UK and Imperial US units
 - *Username* - this is reserved for future purposes. This can be used to identify the device that contributes radio data for the account.
- To select a venue for the radio data collection, performance testing or radio data management, select the desired venue from the **Landing** view
- To return to a previous level, tap the back button
- Long tap over the venue icon in the **Landing** view icon allows you to delete the Public HERE Venue Maps and your custom maps from the view. Private HERE Venue Maps cannot be removed from the view.

Selecting and Managing Venues

The **Landing** view allows you to quickly see and access the indoor maps that are relevant to you. If there are no Private HERE Venue Maps associated with your account, the view is empty when you log in for the first time.

The figure below provides a sample **Landing** view when there are Private HERE Venue Maps associated with your account (*HERE Fargo Office*, *HERE Vancouver*, *POC Hermia 6*, *POC Tampere University*). Also, it shows that you have accessed a Public HERE Venue Map (*Koskikeskus*) and imported your own custom map to the tool (*custom-venue*).

Figure 3: Exemplary Landing View



The **Landing** view may contain the following items:

- Public HERE Venue Maps (like the *Koskikeskus* Venue Map in the sample above)

To add a Public HERE Venue Map from the Public HERE Venue Map database to the **Landing** view, tap the **search** icon and enter a search term. To add the desired venue to your account, tap the venue.

To remove a Public HERE Venue Map from the **Landing** view, long tap the **venue** icon.

- Private HERE Venue Maps (like the *HERE Fargo Office*, *HERE Vancouver*, *POC Hermia 6* and *POC Tampere University* in the sample above) – indicated by a **lock** icon

To have a Private HERE Venue Map added to your account, please contact HERE. When a new Private HERE Venue Map has been added to your account, log out and log in to see the new HERE Venue Map in the **Landing** view.

You cannot remove Private HERE Venue Maps from the **Landing** view.

- Custom image-based indoor maps (like the *custom-venue* in the sample above) – indicated by a **lock** icon

To import your own image-based custom venue map, tap the **plus** icon. For more information, see [Importing Custom Indoor Maps](#) on page 20.

To remove a custom indoor map from the tool, long tap the map.

Selecting and Managing Activities

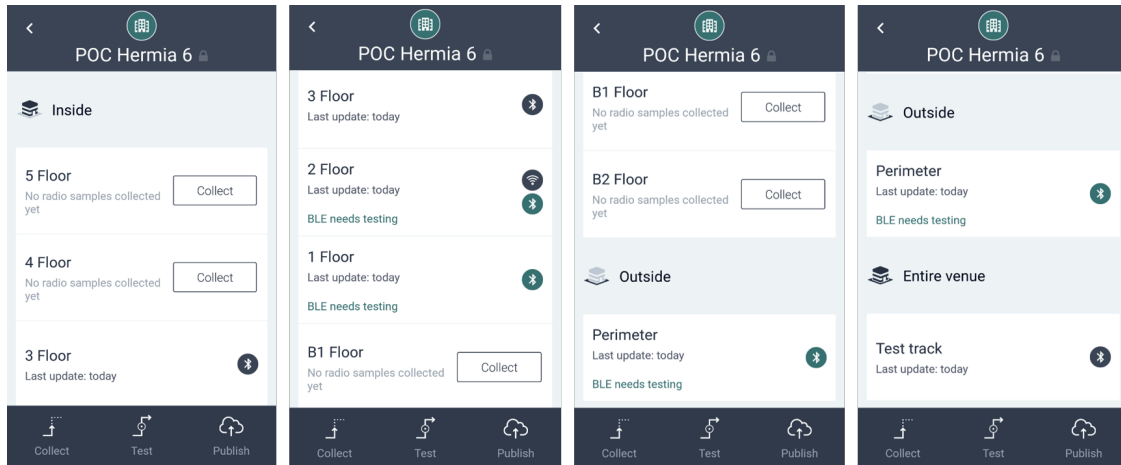
To perform activities and radio data management operations for a venue, select the desired venue in the **Landing** view or select a venue from the **Search** view (Public Venue Maps only). This will take you to the venue **Summary** view that displays the radio data collection and testing status for each floor in a venue.

The figure below provides an exemplary **Summary** view. The figure shows the following characteristics:

- No data has been collected for the B1, B2, 4th and 5th floors
- Bluetooth radio data has been collected for the 1st, 2nd and 3rd floors as well as outside the venue
- WiFi radio data has been collected for the 3rd floor
- Test track for Bluetooth-based positioning has been collected
- The 1st and 2nd floor as well as Perimeter Bluetooth radio data have been changed since the last Publish (indicated by *BLE needs testing*)

- The 2nd floor WiFi radio data and 3rd floor Bluetooth radio data have not been changed since the last Publish

Figure 4: Exemplary Summary view when scrolling down the view



- Note:** When you access the **Summary** view for the first time in the context of a particular custom indoor map, for each floor, there is a line that reads "Bitmap alignment needed". For information on custom indoor maps and on how to align the image to global Latitude and Longitude coordinates, see [Custom Image-Based Indoor Maps](#) on page 19.

The important features of the **Summary** view include:

- Collect radio data indoors (see [Collecting Radio Data Indoors](#) on page 27) by tapping **Collect** for a **floor** in the **Inside** section or the **Collect** icon in the lower bar
- Collect radio data outdoors (see [Collecting Radio Data Outdoors](#) on page 28) by tapping **Collect** for the **Perimeter** in the **Outside** section or the **Collect** icon in the lower bar
- Collect a test track (see [Collecting Test Tracks](#) on page 29) by tapping **Collect** for the **Test track** in the **Entire venue** section or the **Collect** icon in the lower bar
- Manage detailed floor-level information on the collected radio data (see [Floor Radio Data Management](#) on page 32) by tapping the **floor**
- Test the positioning performance (see [Testing for Performance](#) on page 35) after the data collection by tapping the **Test** icon in the lower bar
- Publish the radio data (see [Publishing Flow](#) on page 39) to be used by the HERE Mobile SDK by tapping the **Publish** icon in the lower bar

- Note:** Please note that this is a necessary step before the HERE Mobile SDK is able to locate itself indoors

Chapter

4

Custom Image-Based Indoor Maps

Topics:

- [Importing Custom Indoor Ma...](#)

The following section provides information on custom image-based indoor maps. The HERE Indoor Radio Mapper allows you to import, align and use your own custom image-based indoor maps for the radio data collection and positioning testing.

Importing Custom Indoor Maps

The Indoor Radio Mapper supports at least .bmp, .gif, .jpeg and .png image formats. Images need to describe the floor plan without any tilting and stretching. The width and height of the images must not exceed 2000px, because some Android devices do not support larger images. Different devices may have different limits for the maximum image size.

- **Note:** Perform radio data collection in all the floors between the lowest and highest floors you are interested in. For example, assume that your building has six floors, but you are only interested in positioning in floors 3 and 5. In this case, it is advisable to also import the image for the floor 4 and perform radio data collection also in that floor in order to have smooth floor changes, when moving between the floors.

Prerequisites

Make sure you

- have one image per floor in one of the supported formats and in the right size,
- know latitude and longitude coordinates of two points for each image and
- have copied the custom indoor map images to your device.

Resolving Coordinates

You can resolve coordinates from another map or online satellite image service. Do not use the device GPS to resolve the building corner point coordinates due to the uncertainties involved in GPS positioning. The calibration points should be as far away from each other as possible and the Latitude as well as Longitude values of the calibration points must be distinct, i.e. the two points must lie neither on the North-South nor East-West running line. For example, the diagonally opposite building corners can be excellent reference points given that the diagonal does not point to North/South or East/West. The best scenario is having the diagonal pointing to some intercardinal direction.

Copying

Copy your indoor maps directly to an arbitrary folder in the device as described in [Installing the Indoor Radio Mapper](#) on page 10. Alternatively, you may send the images as an email attachment and save them to a folder in the device.

Importing the images

1. Tap the + icon in the **Landing** view to open the dialog to enter the **Venue name**. You may also optionally enter a free-form description for the venue.
 - **Note:** Use as descriptive name as possible. The HERE Mobile SDK Positioning API reports this name as the `building name`. You cannot change the building name afterwards.
2. Having completed the naming, you can start adding the floors. Once you tap **ADD FLOOR**, a dialog prompts you to select an image representing the floor plan from the device folders.
 - **Note:** You need to add all the floors at this time as this is not possible later on.
3. Enter a **Floor Name** (default name is the image name) and select the **Floor ID** the image represents.
 - **Note:** The **Floor ID** needs to reflect the order in which they appear in the real building assuming the floor 0 is the ground floor.
4. Tap **DONE** to add the floor to the venue
5. Repeat the steps 2-4 for each floor you want to add to the venue
6. Having added all the floors, tap **DONE** to add the venue to the **Landing** view
 - **Note:** Before custom image-based indoor maps can be used for the radio data collection, you need to be align them to the Latitude-Longitude coordinate system. The alignment takes place through the venue **Summary** view.

Aligning the image to the geographical coordinate system

To align an image-based indoor map to the geographical Latitude-Longitude coordinate system, do the following in the venue **Summary** view:

1. Tap the floor requiring alignment.
 - **Note:** The need for the alignment is indicated by the text *Bitmap alignment needed* next to the **Floor Name**
2. Tap the first known reference point on the screen and tap **SET FIX 1**.
3. Enter the coordinates for the first reference point coordinate.
4. Tap the second known reference point on the screen and tap **SET FIX 2**.
5. Enter the coordinates for the second reference point coordinate.
6. Once the second reference point coordinates have been set, the **Collect Data** view is entered. You can return to the **Activity** view by pressing the **back** button.

Complete the above procedure for all the floors.

- **Note:** It is convenient, if possible, to choose reference locations that are distinguishable on several floors.

Chapter

5

Collecting Radio Data

Topics:

- [Basic Radio Data Collectio...](#)
- [Collecting Radio Data in P...](#)
- [Collecting Radio Data Indo...](#)
- [Collecting Radio Data in C...](#)
- [Collecting Radio Data Outd...](#)
- [Collecting Test Tracks](#)

The following section provides information on how to collect radio data by using the HERE Indoor Radio Mapper.

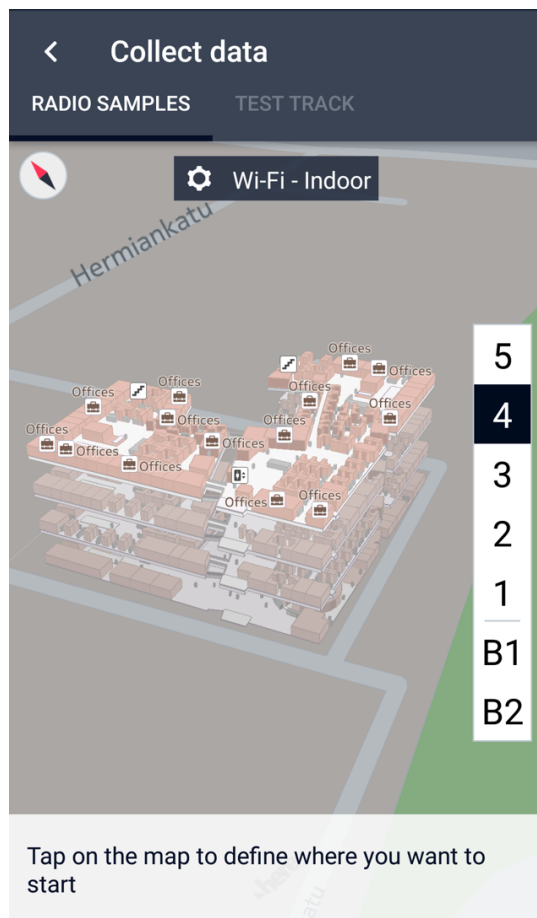
Basic Radio Data Collection

The following section provides instructions on how to collect radio data in the **Collect Data** view and guidelines on how to get optimized results.

To open the **Collect Data** view, tap **Collect** for a **floor** or for **Perimeter**, or tap **Collect** in the lower bar in the **Summary** view. For more information on navigating between views, see [Basic Navigation](#) on page 14.

The following figure shows the exemplary **Collect Data** view.

Figure 5: A exemplary Data collect view



The basic functionality of the **Data Collect** view includes:

- To rotate or tilt the indoor map, use two fingers.

- To zoom in and out, use a two-finger pinch.
- To pan the indoor map, move one finger across the screen.
- To switch floors, use the control on the right hand side.
- To switch between the radio data collection and test track collection, tap **RADIO SAMPLES** or **TEST TRACK** on the top bar.
- To open the settings menu, tap the gear icon. The settings allow to switch the collection mode between **Indoor** and **Outdoor** or the radio type between **Bluetooth** and **WiFi**.

Collecting Radio Data in Practice

There are two ways to collect radio data:

- A long tap at your current location on the screen collects a single radio sample. The message

```
Radio sample with <X> WiFi access points collected
```

or

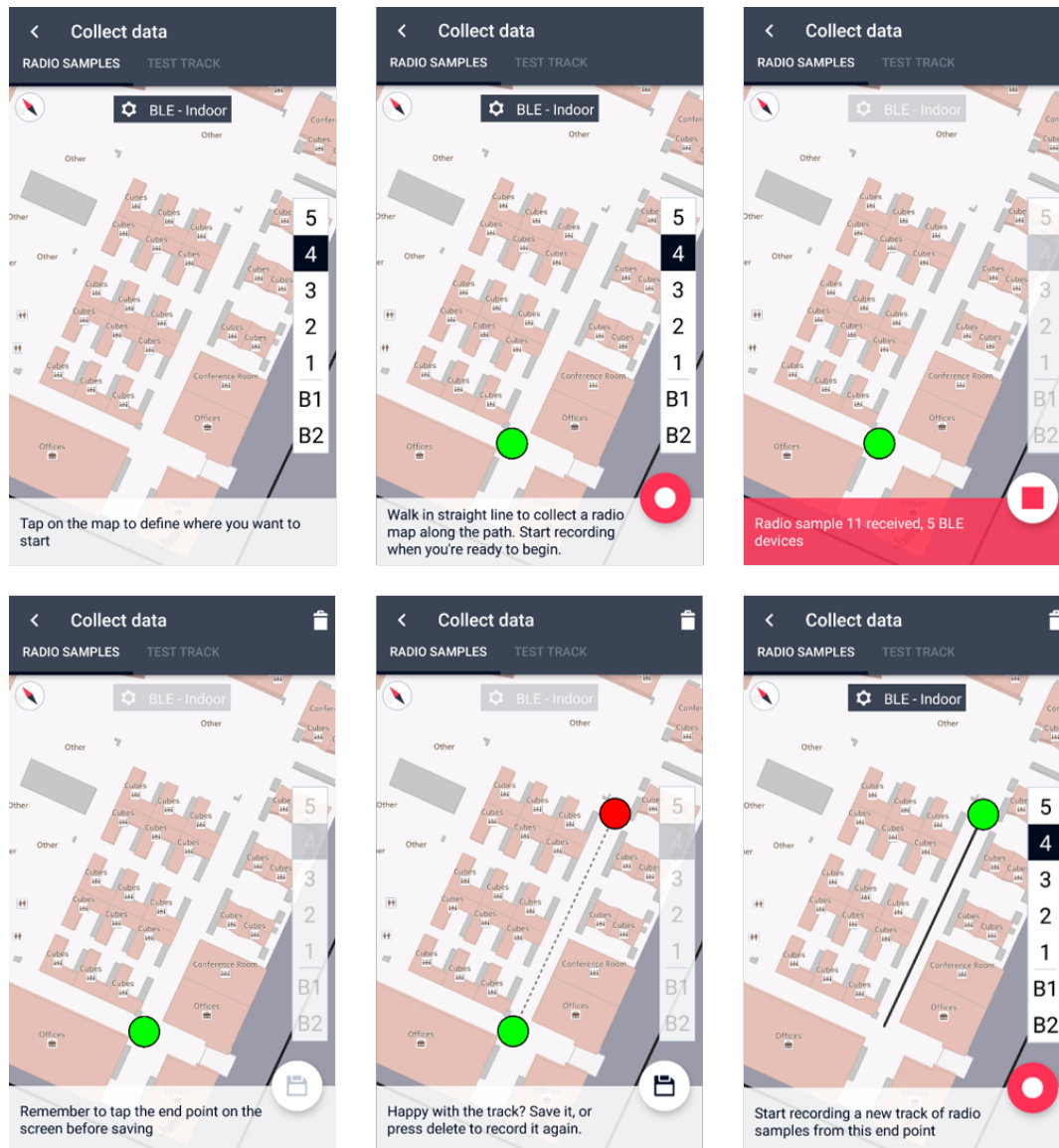
```
Radio sample with <X> BLE beacons collected
```

confirms the successful recording of the radio sample.

- By performing the following steps, you can collect a line, or a series, of radio samples. This sequence is illustrated in the following set of screenshots:
 1. Access the **Collect data** view
 2. Tap your current location on the indoor map to set your start point. When ready, tap the **recording** icon and simultaneously start walking in a straight line with constant speed.
 3. The lower bar indicates the number of radio samples and the number of Bluetooth beacons or WiFi APs observed.
 4. When you reach your target, tap the **stop** icon immediately.
 5. Tap your current location on the indoor map to set your end point. When ready, tap the **save** icon.

- Continue collecting the next line of radio samples from the current location by pressing the recording icon.

Figure 6: The sequence for collecting a line of radio samples



- Note:** To delete the most recently collected data, tap the trash can icon in the upper right corner. Tapping the icon deletes the most recently collected line of radio data.

Collecting Radio Data Indoors

During the radio data collection, it is important to select the correct floor. In some buildings, such as office buildings, the floor layouts can resemble each other significantly and, as a consequence, potentially cause confusion and errors. The more thoroughly you perform the radio data collection, the better the resulting positioning performance.

To limit the effort of collecting data densely throughout the building, the following guidelines help to obtain good coverage:

- It is better to collect radio data from all the building areas with lower density than to collect radio data from a limited area with higher density.
- Main areas, such as main corridors, hallways and main halls have a higher priority; map them first.
- Smaller rooms have lower priority; map them in the second phase.
- In corridors (up to three to five meter width), collect a line of radio data along the both walls
- Collect radio data in small rooms along the walkable areas. For example, if the room is a small one, i.e. few meters in width, you need to collect only one line of radio data along the center line of the room. You can also consider just taking single radio samples at the room corners.
- In bigger rooms, collect lines of radio data along the room edges, if the width of the room is moderate (not larger than three to four meters).
- If the width of the location (room or hall) is larger than four meters, it is advisable to collect measurements both along the edges and in the open area. For example, if the width of the location is 10 meters, collect data along four lines: along the edges and another two lines three to four meters from both edges.

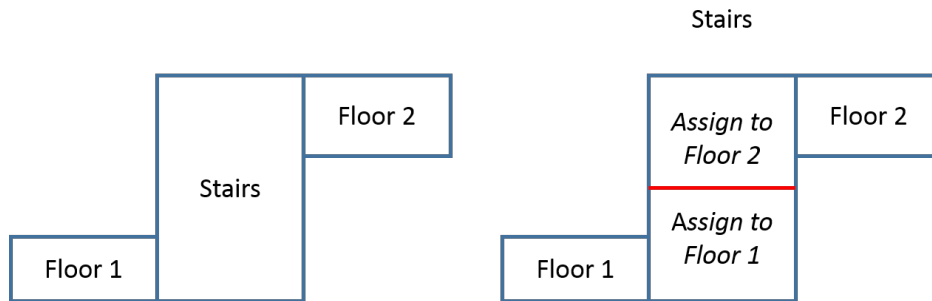
For information on how to collect radio data in connectors such as staircases and elevators, see [Collecting Radio Data in Connectors](#) on page 27.

Collecting Radio Data in Connectors

Connectors are places that connect floors, such as stairs, escalators or elevators. In order to have well-performing floor change behavior, you also need to collect radio samples in the connectors. In

case of a staircase or an escalator, you can virtually divide the connector between the two connected floors roughly in the middle. The figure below shows an example:

Figure 7: Radio sample collection in connectors



When collecting radio data with the HERE Indoor Radio Mapper, assign the radio data collected below the red line to the Floor 1 and the data collected above the red line Floor 2. In case of an elevator, we suggest to take a single radio sample in a stationary elevator in the floor 1 (assigned to the Floor 1) and another radio sample again in a stationary elevator in the Floor 2 (assigned to the Floor 2).

Collecting Radio Data Outdoors

Collecting radio data outdoors is similar to collecting radio data indoors with the exception that you do not need to select a floor. You can freely choose a floor, but it does not have any impact on the end result as there is only one outdoor floor.

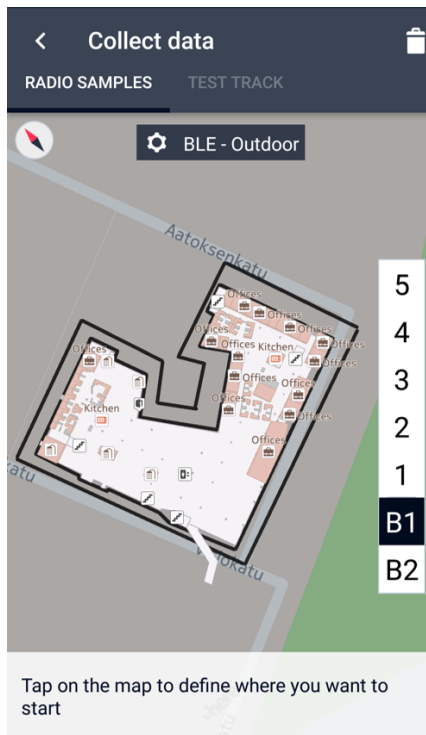
Make sure to observe the following guidelines for optimized results:

- Collect outdoor radio data along the building perimeter.
- Collect radio samples within a 10-meter radius around the building, each time moving between three to five meters away.
- Change the walking direction after each round.

The figure below shows radio data collected while circling the building twice. As the first round is taken just next to the building outer wall, and the second round is roughly five meters further, it is

advisable to make a third round around the building, another three to four meters further away from the second round.

Figure 8: Collecting Radio Data Outdoors



Collecting Test Tracks

Collecting a test track provides you with quantitative feedback on the positioning accuracy and floor detection rate.

To collect a test track, select the **Test Track** from the upper bar in the **Collect Data** view, or tap **Collect** for the **Perimeter** in the venue **Summary** view.

Collecting a test track is similar to collecting radio data, with the following guidelines:

- Select the outdoor mode from the settings.
- Select the technology (Bluetooth or WiFi) from the settings.
- Visit all the floors from which you have collected the radio data.
- Comprehensively visit the areas from which you have collected the radio data.
- Visit also outdoor areas, in case you have collected outdoor radio data.
- As test tracks need to be continuous, you need to continue the track always from the end point of the previous line.

- When changing from indoors to outdoors, or vice versa, remember to change to indoor/outdoor mode from the settings menu.

You can only collect one test track per building. If you have already collected for example a Bluetooth test track, you can no longer collect a WiFi test track before deleting the old test track. You can delete the test track by entering the detailed view by tapping the **Test Track** in the **Summary** view.

You can collect test tracks with less density than radio samples. For example, when collecting a test track in a corridor, instead of collecting a line of radio data along the opposite walls (as when collecting radio samples), you can collect a test track along the center line. The same applies to rooms and other areas.

Figure 9: Exemplary Test track in the Collect Data view



Chapter

6

Managing Data

Topics:

- [Floor Radio Data Managemen...](#)
- [Storing Collected Data](#)

The following section provides information on how to manage the collected radio data in the HERE Indoor Radio Mapper.

Floor Radio Data Management

The radio data management refers to managing the radio data collected for your account. The radio data management for each floor is accessed from the Venue **Summary** view. When tapping a floor for which radio data has been collected, you will be shown the **Radio Data Management** view that includes a list of the collected radio data sets.

The basic concepts of the radio data management are:

- The changes made in this view only affect the Draft, which can be tested in the **Test** view. The changes are reflected to the HERE Mobile SDK only when you publish the radio data.
- The Draft is automatically updated, when returning to the **Summary** view
- Any changes made will be reflected to the Cloud and from there to the other HERE Indoor Radio Mapper instances running on the same account. Note that the conflict resolution is simply based on the latest change winning.
- Only unpublished radio data sets can be deleted
- When publishing, all the enabled radio data sets end up to be used by the HERE Mobile SDK

For further information on the Draft and the published radio data, please see [Publishing Flow](#) on page 39.

A new radio data set appears in the **Radio Data Management** view every time you collect new radio data in the **Collect Data** view and return to the **Summary** view. The basic operations that can be done in the management view are:

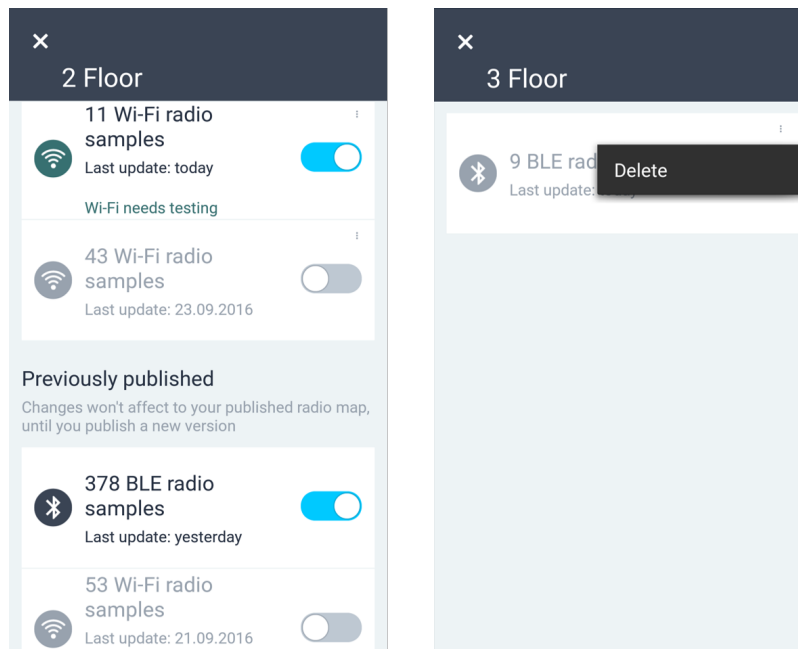
- Visibility to which radio data sets have been published for use by the HERE Mobile SDK, and which are still unpublished
- Disable radio data sets from use (only the Draft radiomap is affected)
- Enable radio data sets back into use (only the Draft radiomap is affected)
- Delete radio data sets (only un-published ones)

The following figure shows exemplary **Radio Data Management** views for two floors. The following remarks can be made:

- For the 2nd floor
 - 11 WiFi radio samples are only in the Draft, not usable by the HERE Mobile SDK
 - 43 WiFi radio samples have been disabled from the use totally
 - 378 Bluetooth radio samples are both in the Draft and also published for the HERE Mobile SDK

- 53 WiFi radio samples have been published for HERE Mobile SDK, but disabled from the Draft
- For the 3rd floor
 - 9 BLE radio samples have been disabled from use totally. The **delete** menu has been exposed by pressing the three vertical dots. Pressing **delete** will delete this radio data set (9 BLE radio samples).

Figure 10: Exemplary Radio Data Management View



Storing Collected Data

HERE Indoor Radio Mapper stores all the collected radio data in the HERE Cloud given that the device has Internet connectivity. If the radio data cannot be uploaded immediately, the radio data is stored in the internal database. The data remains in the database, even if:

- the application is closed,
- the device is switched off, or
- the device runs out of battery.

Chapter

7

Testing Positioning Performance

Topics:

- [Testing for Performance](#)
- [Testing Positioning Real-T...](#)
- [Running a Test Track](#)

The following section provides information on how to conduct performance testing with HERE Indoor Radio Mapper.

Testing for Performance

The HERE Indoor Radio Mapper provides two methods to assess positioning performance:

- Real-time positioning and assessing the performance qualitatively
- Running a test track and assessing the performance quantitatively

The pre-requisite for testing is collecting radio data at the venue. After the radio data upload, it takes some minutes before the generated radiomap is available for testing.

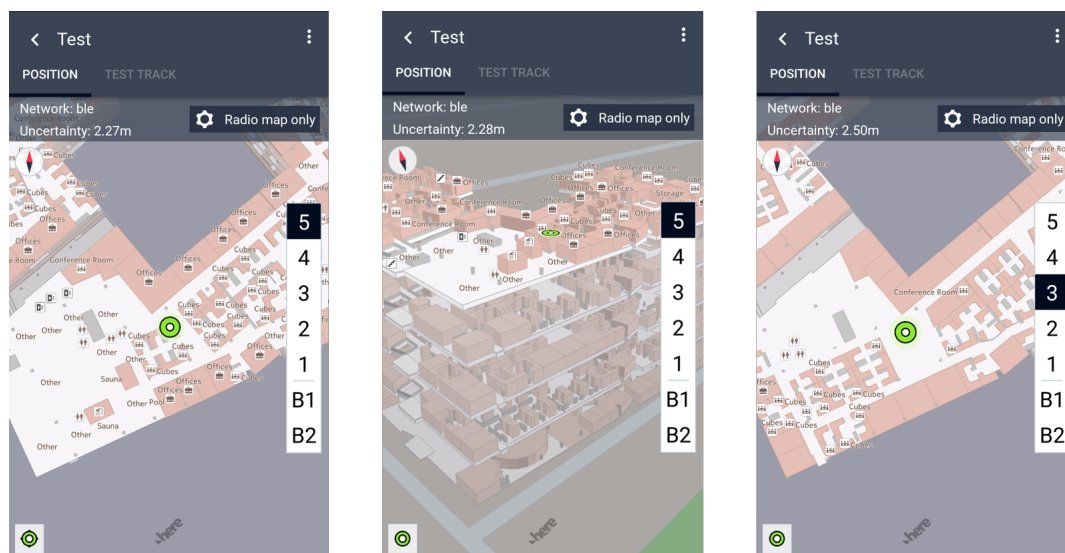
To open the **Test** view with the latest positioning data (radiomap) from the HERE Cloud, tap **Test** in the lower bar of the **Summary** view. For more information on navigating between views, see [Basic Navigation](#) on page 14.

Testing Positioning Real-Time

The real-time positioning view is accessed from the **Summary** view by pressing the **Test** icon in the lower bar.

The following figure shows a sample **Test** view for the real-time testing (indicated by **POSITION** in the upper bar). Note that the **menu** item in the upper right corner allows manually updating the positioning data to the device in case you are facing difficulties positioning.

Figure 11: Exemplary real-time positioning view



The **Test** view provides the following controls:

- **Gear icon**

Access to the selection of the positioning mode and an indication of the selected positioning mode.

- Activate **Radio map only** if you want use indoor positioning exclusively.
- Activate **Hybrid** if you want to use all HERE positioning technologies (HERE Indoor Positioning, HERE WiFi/Cell -based Network Positioning and satellite-based methods). In this case HERE Indoor Radio Mapper will select the best positioning method automatically.

- **Centering icon**

The **centering icon** is located in the lower left corner. When you tap the **centering icon**, the screen is centered to the current location and floor. Moreover, the screen is kept centered to the current location and floor as you move. This *tracking mode* is indicated by having the **centering icon** in sight (see the leftmost screenshot).

■ **Note:** The rightmost screenshot in the figure above shows the situation that the floor has been changed to the third floor, although the correct location is in the 5th floor. Note that the location indicator is shown also in the 3rd floor, but the **centering icon** at the lower right corner indicates that the location is not being tracked. When you again want to get back to the current floor, press the **centering icon**.

The **Test** view provides the following information:

- **Network**

Indicates the technology used for the location determination, and is one of *ble*, *wifi*, *cell* or *gnss*. Positioning algorithms automatically choose the best available positioning technology.

■ **Note:** If you activate **Radio map only**, **Network** indicates either *ble* or *wifi*. In contrast, in **Hybrid** mode, **Network** can indicate either *ble*, *wifi*, *cell* or *gnss*.

- **Uncertainty**

Indicates the estimated location uncertainty in meters.

Running a Test Track

Before running a test track, you need to meet the following prerequisites:

- Collect a test track. You can collect a test track at any point during the deployment: either before or after the radio data collection. For information on how to collect test tracks, see [Collecting Test Tracks](#) on page 29.

- A Draft needs to exist for the venue (see HERE Indoor Positioning Installation Guide for the discussion on radiomaps). The Draft is automatically generated and updated, when radio data is collected for the venue.

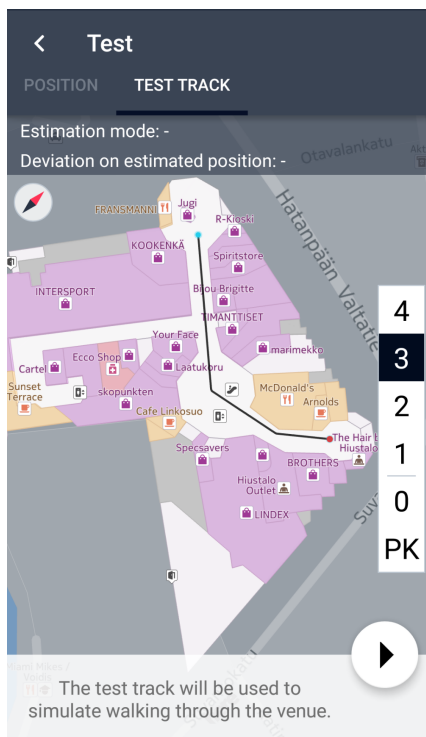
After tapping **TEST TRACK**, the **Test** view provides the following functionality:

- Tap the play button in the lower right corner of the **Test** view to playback the test track. While you playback the test track, additional control buttons are available for moving back and forth within the track to examine, in more detail, the performance in the different sections of the track.
- **Estimation mode** indicates whether you collected the test track using *BLE* or *WiFi*.
- **Deviation on estimated position** indicates the distance in meters between the test track position and the current estimated position.

After playback, HERE Indoor Radio Mapper provides the following information:

- **Mean error** - average error over the whole track in meters
- **Floor detection** - rate of detecting the correct floor in percentage; 100% means perfect floor detection

Figure 12: Exemplary Test Track view



Chapter

8

Publishing Radio Data

Topics:

- [Publishing Flow](#)

The following section provides details on publishing the radio data for use by the HERE Mobile SDK. The radio data needs to be published before it can be used by the HERE Mobile SDK.

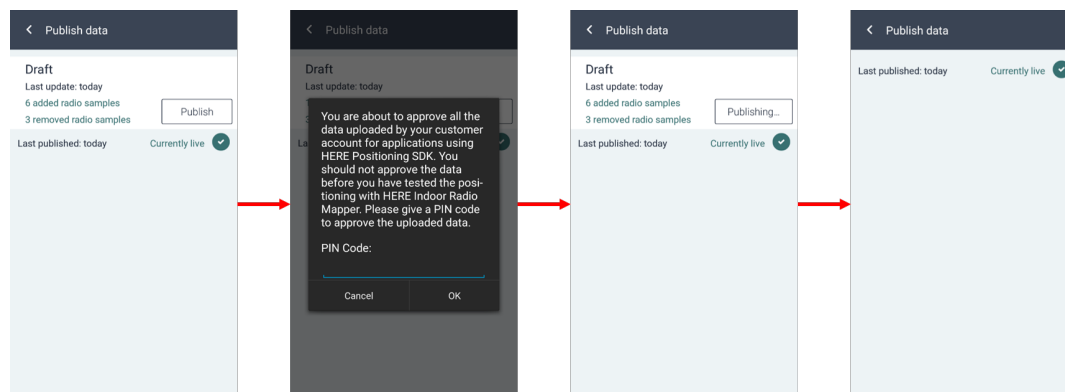
Publishing Flow

Whenever radio data is being collected or a radio data set state is changed between enabled and disabled in the **Radio Data Management** view, the operations affect only the Draft radiomap. The basic idea is that radio data can be modified and tested freely in the HERE Indoor Radio Mapper using the Draft and the changes are not reflected to the production before the radio data is published. Note that when you test positioning with HERE Indoor Radio Mapper, you are always testing the positioning performance using the Draft. Thus, before HERE Mobile SDK sees the same radio data as you test in the HERE Indoor Radio Mapper, you need to publish the radio data.

Publishing means synchronizing the Draft to the production. Any radio data sets, published or unpublished, that are *enabled* in the per-floor **Radio Data Management** view are published, when publish is commenced in the **Publish** view. Vice versa, any *disabled* radio data sets, published or unpublished, are removed from the production upon publish. Please refer to HERE Indoor Positioning Installation Guide for detailed explanation on the Draft and published radio data.

The following figure shows the publishing sequence. When entering the **Publish** view you will see the latest publishing time as well as the latest Draft update time. Moreover, you will be shown the difference between the Draft and the currently published radio data (number of added and removed radio samples).

Figure 13: Publishing flow



If you decide to publish the current Draft, the User Interface queries the PIN code. The PIN is queried in order to make sure that only authorized persons can publish the radio data. Once the PIN code has been input, the **Publish** button changes to indicate *Publishing*. Once the publishing process is complete, the only indication left will be the latest publishing time. This indicates that the Draft

and the published radio data are now synchronized. Note that the Bluetooth and WiFi radio data are published at the same time.

- **Note:** PIN code can be found from the Highlights section in the HERE Indoor Radio Mapper Release Notes.

Chapter 9

FAQ

Topics:

- [Why do I have to walk in s...](#)
- [Why do I need to align my ...](#)
- [Are there any device setti...](#)

The following section lists frequently asked questions and provides useful answers.

Why do I have to walk in straight lines at constant speed?

HERE Indoor Radio Mapper interpolates the collected radio samples between the start and end points you indicate on the floor plan. As the HERE Indoor Radio Mapper does not know about your walking speed or any turns that you make, the tool assumes that you walked in a straight line from the start to the end at constant speed. This assumption allows the HERE Indoor Radio Mapper to divide the radio samples evenly along that line.

Why do I need to align my own custom indoor maps to Latitude and Longitude coordinates?

Alignment serves two purposes:

1. To understand the dimensions of the building, in meters. This is important for HERE Indoor Positioning to function correctly.
2. When we switch from indoor positioning to outdoor positioning, having both indoor and outdoor maps in the same coordinate system is the only way to ensure smooth transition.

Are there any device settings that I should be aware of?

The latest Android devices have an advanced option that allows measuring the WiFi and Bluetooth radio signals even when the radios are turned off. HERE Indoor Radio Mapper benefits from enabling this option.

In Samsung devices these settings can be found through **Settings -> Location -> Improve accuracy**. The menu has the setting separately for WiFi and Bluetooth. HERE Indoor Radio Mapper queries these settings to be enabled, if not already enabled.

When this setting is enabled for WiFi, HERE Indoor Radio Mapper switches the WiFi connectivity off, when collecting WiFi radio data in order to ensure the best measurement quality. Similarly, when this setting is enabled for Bluetooth, HERE Indoor Radio Mapper switches the Bluetooth connectivity off, when collecting Bluetooth radio data in order to ensure the best measurement quality.