The Drone Harmony Mission Planner

A User Guide

All you need to know to get started and work with Drone Harmony Basic and Drone Harmony Plus

Starting Out with Drone Harmony

Drone Harmony is the modern drone data capture tool for inspection and mapping professionals. It is unique in several ways that make it both more automated and more intuitive than other solutions on the market. This allows working with much more complex environments than previously possible and achieving excellent repeatable results. The main aspects that differentiate Drone Harmony from existing applications are

- the dual 2- and 3D working interface
- the scene-centered workflow and automatic mission generation
- the tailored mission planners for specific use cases/markets

The Drone Harmony mission planning products (Drone Harmony Basic and Drone Harmony Plus) are quickly evolving products and hence part of the information in this document might be outdated. It is advised to consult the resources in the end of the document for an up to date picture of the current state of the products. This page contains the latest release notes. The Drone Harmony website always contains up to date information.

What does DH do and what does it not do?

Drone Harmony is a data capture tool, namely it is designed to easily and efficiently collect drone data (photos or video) for a variety of applications. Drone Harmony **does not** generate 3D models or point clouds from the captured data (and hence does not replace products such as ContextCapture or Agisoft).

What do you need to work with Drone Harmony?

You will need a DJI drone and an Android device with Android 5 or higher. Drone Harmony runs on the mobile device (phone or tablet). You will only need internet connection to load maps and share states of the app. Everything else can be done offline. You will also need to be online the first time you start the app to register with the DJI libraries used by the app.

How to get Drone Harmony?

The Drone Harmony Mission Planner is available to two versions:

- **Drone Harmony Basic** available on the Google Play Store.
- **Drone Harmony Plus** available for download on our website.

See our product comparison page for information about the different products and plans or email us at sales@droneharmony.com.

The Interface

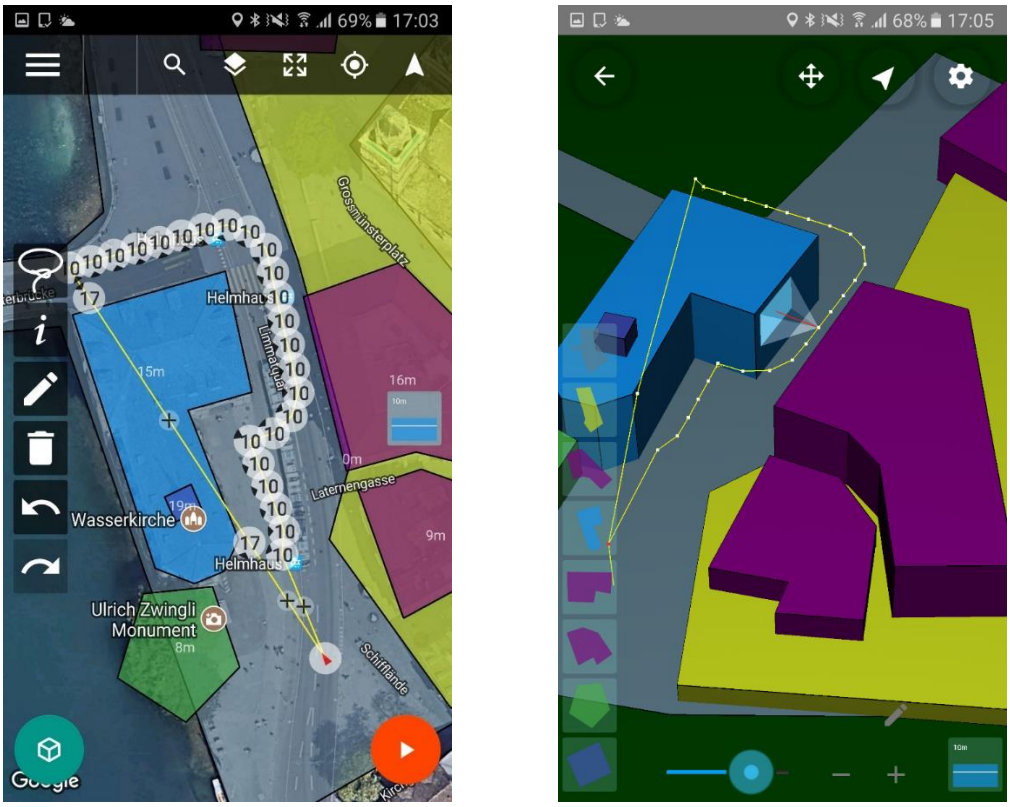
Unlike traditional mission planners, Drone Harmony features a dual interface with

- A 2D Map view
- A full 3D viewer

Drone Harmony's 2- and 3D Interfaces

The map interface is based on existing map services, such as Google Maps and includes information about the 2-dimensional geo-location of streets, buildings etc. It is used to outline objects in the world that need to be inspected or mapped. It is also used to outline other objects or areas that are relevant for the flight, such as potential obstacles, points of interest etc.

The 3D view visualizes in a three-dimensional viewer all the objects that were outlined in the scene and all flight plans that were generated. The icons on the left represent **scene objects,** while the icons on the right represent **missions.** It is possible to tap on scene objects to show/hide the object. By choosing a mission and dragging the bottom scroller it is possible to simulate the mission to accurately visualize its flight trajectory. Exact camera angles are visualized using the camera cone that slides with the simulated trajectory. In some versions of Drone Harmony even the part of the scene visible from every shot is visualized by means of an illumination.



The Same State in 2- and 3D Views

It is possible to switch from Map to 3D view by tapping on the cube icon on the bottom left corner of the screen. To return to map view tap return or tap on the arrow on the top left corner of the screen.

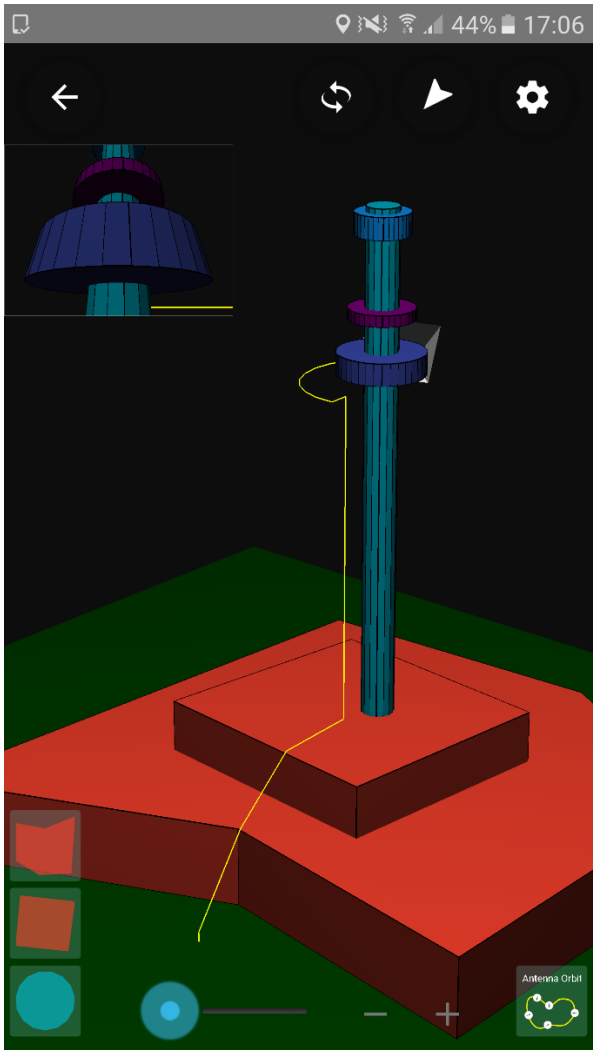
The combination of both 2- and 3D interfaces allows the user full expressive power to describe the mission parameters in an easy, intuitive and visual way. The 3D information in the app has, however, more than just the advantage of visualization. It is also the information that Drone Harmony uses to generate flight plans. We elaborate on this in the next sections.

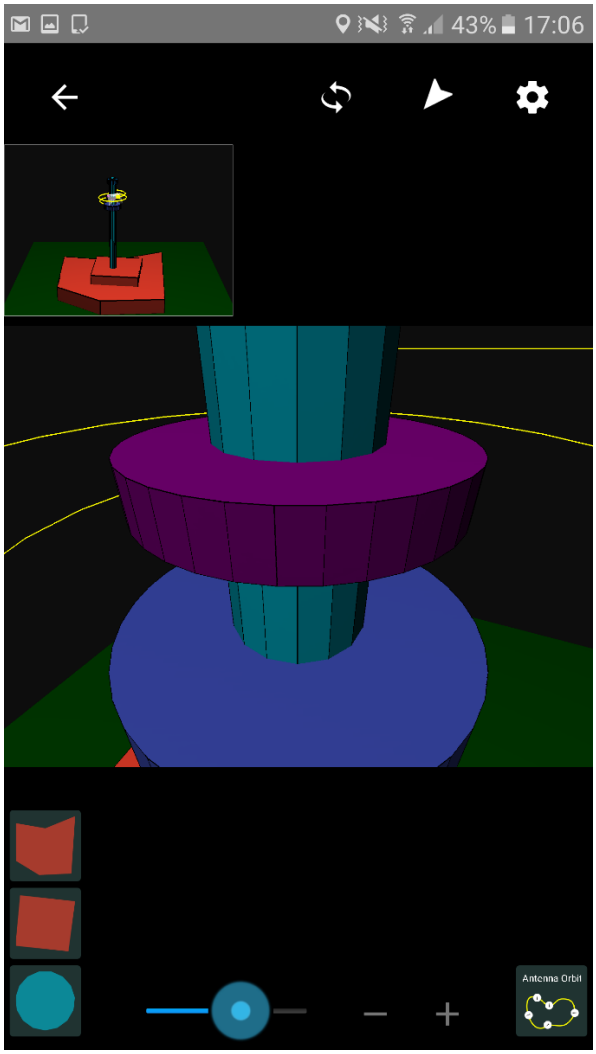
First vs. Third Person View in 3D

Drone Harmony 3D view allows two different viewing modes. The default view is third person view, in which both scene and flight plans are displayed from a bird's eye perspective. It is possible to rotate, pan and zoom to obtain a rich set of perspectives.

It is sometimes, however, useful to inspect the flight plan from first person view, namely from the perspective of the drone, even before the execution of the flight. This option allows the user to closely examine the content of every image, as reflected by the scene in Drone Harmony and adjust if needed. To transition to this view, simply choose a single mission in the bottom right menu and tap on the simulated FPV view that appears on the top left corner of the screen. You can now drag the slider on the bottom to

simulate the flight trajectory in first person view. The following figures illustrate a third person view (left) of a scene, and a corresponding first-person view (right) for the selected flight plan.

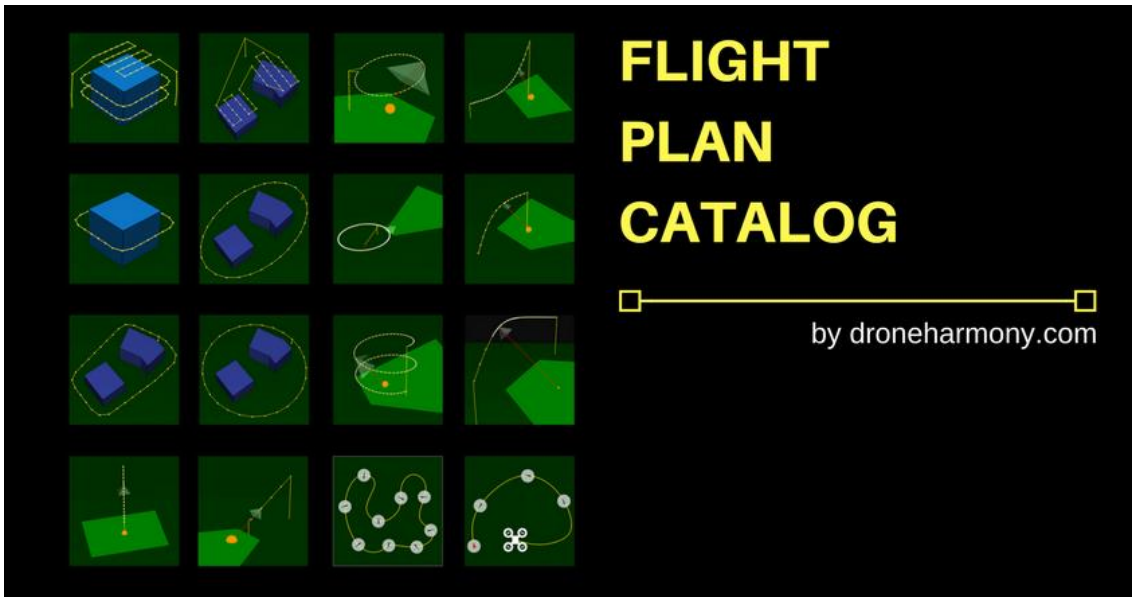




The Planning Workflow

Drone Harmony has a unique workflow that is based on a **scene,** namely the total sum of all 3D objects in space that are relevant for the flight. The scene can hence include both the mapped/inspected object, as well all obstacles that might be interfering with the flight.

Once the scene is defined, the user is able to choose a flight plan from the **plan catalog**, a comprehensive collection of flight patters useful for anything from mapping an area to inspecting a façade of a building. Drone Harmony will automatically adapt generate a flight tailored to the scene defined by the user that corresponds to the chosen pattern.



Some of the Missions in the Drone Harmony Plan Catalog

For example, if the user wants to scan the roof of a building, the workflow would entail:

1. Outlining the building (thus adding it to the scene) as well as potential obstacles (other buildings, trees etc.).
2. Generating a plan for the building by choosing “Top Down” in the plan catalog, selecting the building to inspect, adjust parameters (sampling resolution, overlaps etc.) and tap “Generate”.

The same two step workflow applies to any mission created in Drone Harmony. In some cases, the first step of scene generation is guided. For example, in the case of Cell Tower Scan, the skin in Drone Harmony tailored for inspecting cell towers, has a wizard to easily and intuitively create a simplified model of the tower for accurate mission planning.

Watch this video for a demonstration of the workflow (note that an older version of Drone Harmony is presented, so some menus might look different today). This page also has more information.

First Step in the Workflow: Defining the Scene

What Options are there to load/import scene information?

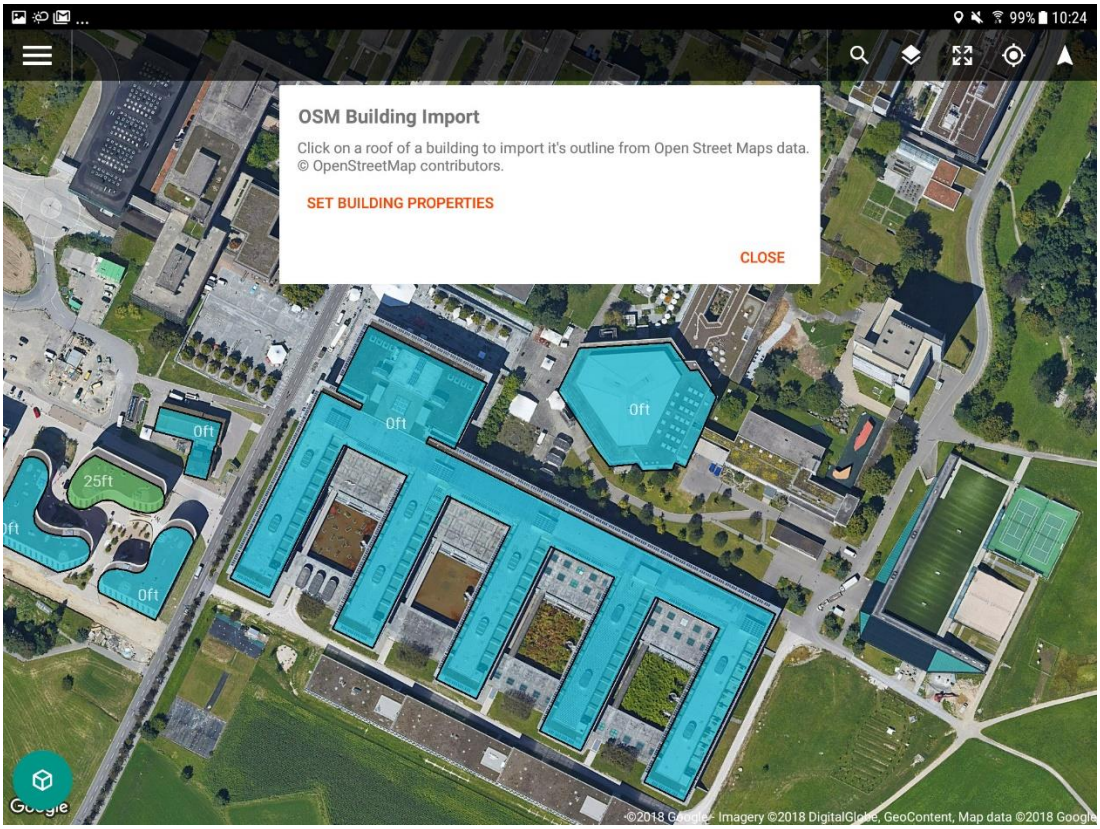
You can **save and load** states (scenes and missions) in any Drone Harmony product. The states are stored on the mobile device. You can also load a state from a **.dhm** file, which is generated whenever the state in Drone Harmony is **exported.** Use the "Export State" option to share states with colleagues.

Drone Harmony provides several ways to facilitate the accurate creating and definition of the scene. The following are the three main such options.

1. It is possible to import information from **KML / KMZ files** (Menu -> Import & Export -> Import KML / KMZ)**.** You can import both scene objects and missions this way.
2. The **Magic Building Selection Tool** in the left menu in map view lets you tap on the roof of buildings to automatically add their outline to the scene. After each selection it is possible to edit the building parameters to add color and height. This tool is based on Open Street Maps (OSM), so the tool will only work in areas where OSM has the required information. This tool is particularly useful for

outlining complex buildings, or structures with hard to see boundaries on the map (see screenshot below). Once a building is outlined, you have the option to tap on “Set Building Properties” in order to change the color of the structure and add a height to it.

3. You can also import **terrain elevation data** into Drone Harmony to perform terrain aware flights (See section “Mapping”).



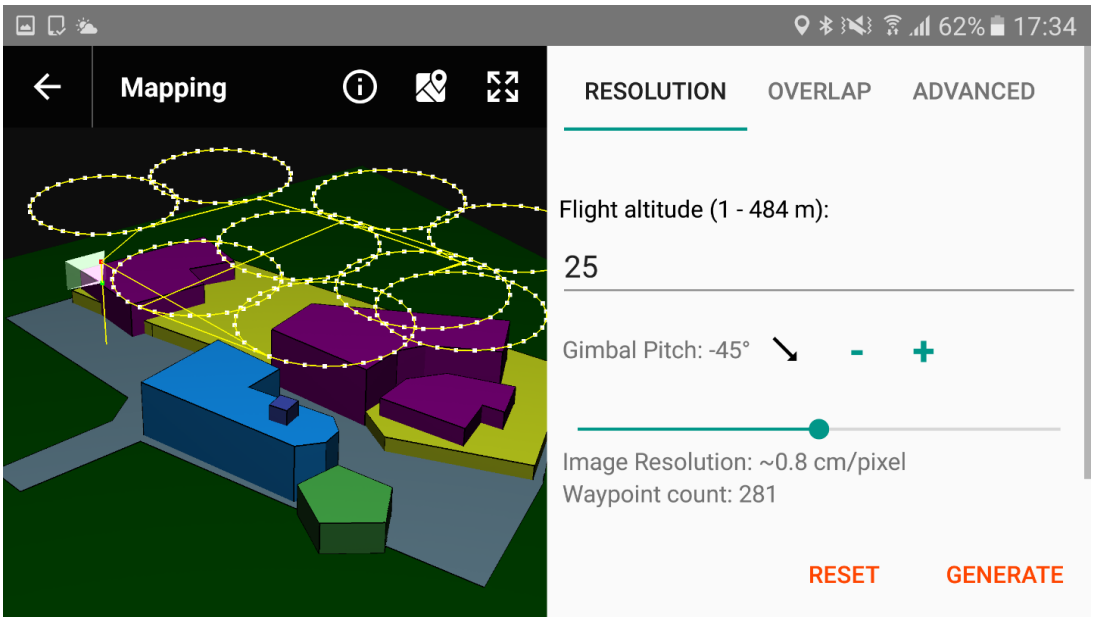
Complex buildings selected using the magic selection tool

Generating Missions

Drone Harmony’s scene centered workflow is designed to make mission generation as automatic and easy as possible. While the missions are generated automatically, the user has many ways to control the generated mission and adjust it after the mission is generated.

To generate a mission for the current state of the scene (the collection of objects in app that were outlined or imported) tap on the plus (“+”) icon on the bottom right corner of the screen in map view. The app will prompt the plan catalog – the collection of mission patterns that can be used to generate a mission for the scene. Some options might be grayed out if the scene does not contain suitable objects. Once a mission patter is selected, the user is asked to select the scene objects to apply the pattern to and to select a planned liftoff and landing location on the map. Whenever only one valid choice exists, the app selects it automatically.

Once these steps are completed the Drone Harmony **Mission Generation Wizard** is prompted. The wizard is to the selected pattern. It contains a split view. On the left side (top side in Portrait) the wizard presents a 3D visualization of the scene and the flight plan that would be generated if the current parameters were kept. On the right side (bottom for Portrait) the user is presented with mission parameters that are relevant for the pattern selected. Common parameters include image overlap, camera (or drone) type, sampling resolution etc. The parameters are grouped in tabs and can be freely adjusted to fit the user requirements. Every adjustment to the parameters is immediately visualized in the viewer leaving little place



Mission Generation: Mapping Orbits

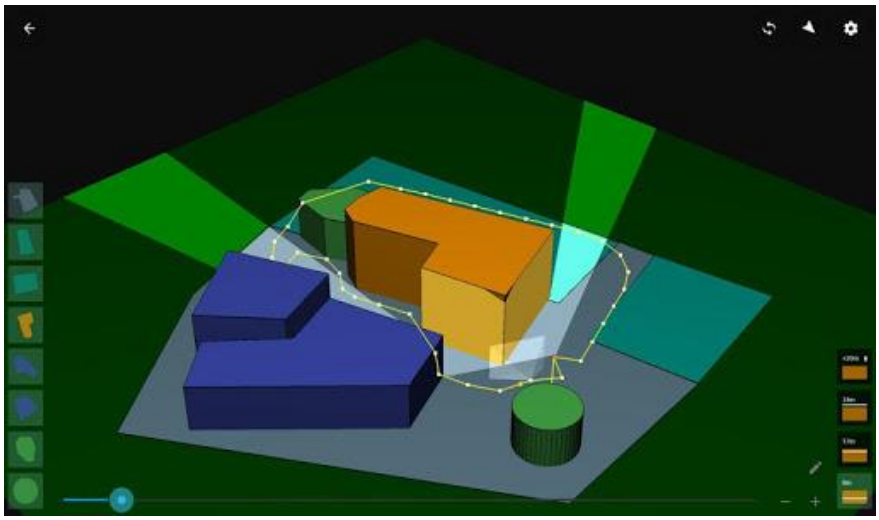
In summary the steps of generating a mission for the defined scene are

- Tapping on the “+”
- Selecting a mission form the plan catalog
- Selecting the scene object to which to apply the pattern
- Selecting liftoff/landing location in map view
- Adjusting parameters in the mission generation wizard
- Tapping “Generate”

Obstacle Avoidance

As was mentioned before, Drone Harmony’s scene centered workflow allows the user to not only define the inspected objects, but also other objects that might interfere with the flight, namely the **obstacles.**

Before a mission is automatically generated for a specific scene object (the “target(s)”), all scene objects are treated the same way, namely they have no designation as obstacles of targets. This changes once a mission pattern is chosen from the mission catalog and the object(s) that the mission should be applied to is selected. At this point, all objects in the scene that are not the target are considered as obstacles and the generated mission avoid these obstacles. This feature is unique to Drone Harmony and it allows to generate flights that are both safe and optimized for the environment. Due to this feature it is always a good idea to outline every possible obstacle in the vicinity of the planned flight before starting to generate the mission.



Drone Harmony's Automatically Generated Mission Avoid Scene Obstacles Automatically

What is the difference between Drone Harmony’s obstacle avoidance the obstacle avoidance using the sensors of the DJI drone?

Drone Harmony employs complex algorithms of fly around the obstacle that **the user** outlined or imported **before the flight planning stage**. Including these obstacles allows Drone Harmony to plan a safe flight for the real environment and optimize **the way that drone avoids obstacles** to ensure best possible data in light of the presence of obstacles.

In contrast, the obstacle avoidance capabilities of DJI drones are used to avoid dangerous situation **during flight execution** and are based on on-board sensors.

The combination of both types of obstacle avoidance is a powerful feature both from the data quality and safety points of view.

Does Drone Harmony override/disable DJI’s obstacle avoidance?

No. However, since Drone Harmony’s flight control of DJI drones is based on the DJI SDK (Software Development Kit), the behavior of DJI’s obstacle avoidance can depend

on the protocol that the SDK applies for the given drone. This means that for some drones, the SDK might disable some obstacle avoidance sensors when executing an automatic mission by any mission planner (including Drone Harmony).

Flying a Mission

Drone Harmony flies all mission automatically, without the need to piloting. To fly a mission

- Connect the drone to the controller (see this page for help and troubleshooting).
- Select the mission you would like to fly from the mission menu on the right in the map view.
- Tap the play button on the bottom right of the screen
- Work your way through the launch dialogue and start the flight

What are my options during the automatic flight?

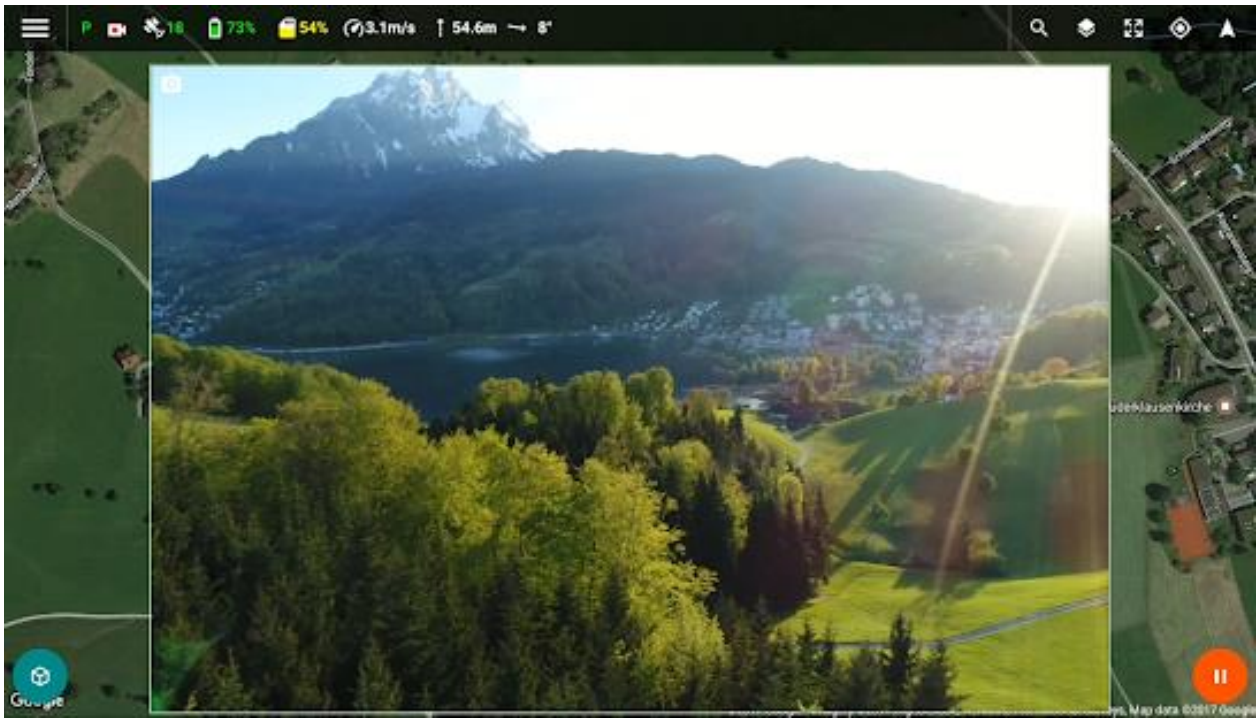
During automatic execution of the of a Drone Harmony flight you have, among others, the following options.

- Immediately **stop the flight** by switching modes on the controller from “p” to “s” (sport) mode. This results in immediate halting of the execution of the mission. The drone will stay hovering in place and the pilot will gain control of the drone through the controller. **Use this option if you feel unsafe about the executed flight**, e.g. when the drone approaches an obstacle.
- **Pause the mission** to temporarily stop the execution of a mission, make adjustments, change own physical location to improve radio signal etc. A paused mission can be simply resumed by tapping on the resume button.
- **Adjust speed of flight** using the tachometer tool on the left menu. It is even possible to fly the drone backwards and “reply” a part of the mission without stopping and restarting.

What will Drone Harmony visualize during flight execution?

During the flight execution Drone Harmony visualizes the current location and heading of the drone, the positions on the map at which the drone took a picture, the flown trajectory and more. It is also possible to follow the automatic flight in the 3D view.

Furthermore, an FPV window appear on the screen in map view as soon as the drone is connected. This window can be maximized to capture a larger part of the screen. Finally, telemetry data will be displayed on the top bar.



Flight Execution with Maximized FPV

What happens in the end of a flight?

When an automatic Drone Harmony flight ends you return to the planning state and are able to interact again with the scene and the missions, or start to fly another automatic mission.

Also, after every flight, a **flight icon** appears on the top menu in both the map and 3D views. This icon represents the recorded trajectory, or **flight,** that the drone actually followed during the automatic mission execution. By tapping on the icon, the trajectory is visualized. You can use this to compare the mission with the actual trajectory that was flown or store it for future reference and comparison.

What logging solutions is Drone Harmony compatible with?

Drone Harmony is directly integrated with Airdata and DroneLogbook, the two leading logging solutions for drones on the market. You have the option to upload logs directly to both services through Drone Harmony.

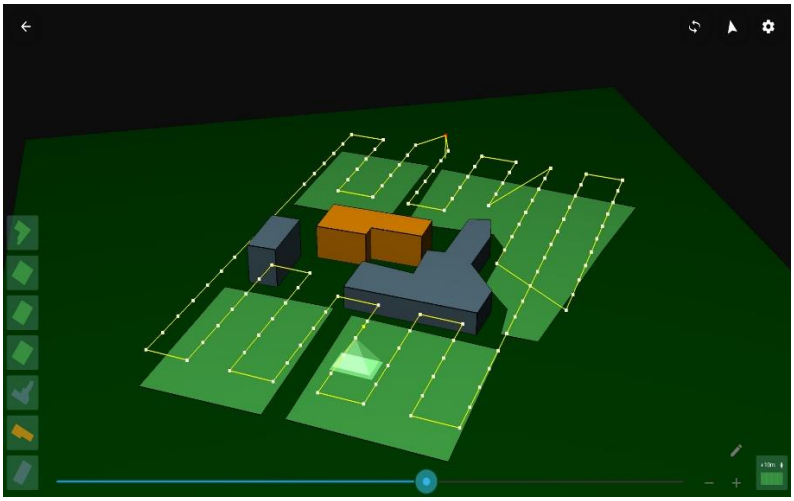
Mapping Missions

Drone Harmony has a variety of missions suited for mapping small and large regions. Some missions a suitable for mapping flat areas, or collections of flat areas at different elevations, while other missions can be used in combination with terrain elevation data to fly **Terrain Aware Flights.**

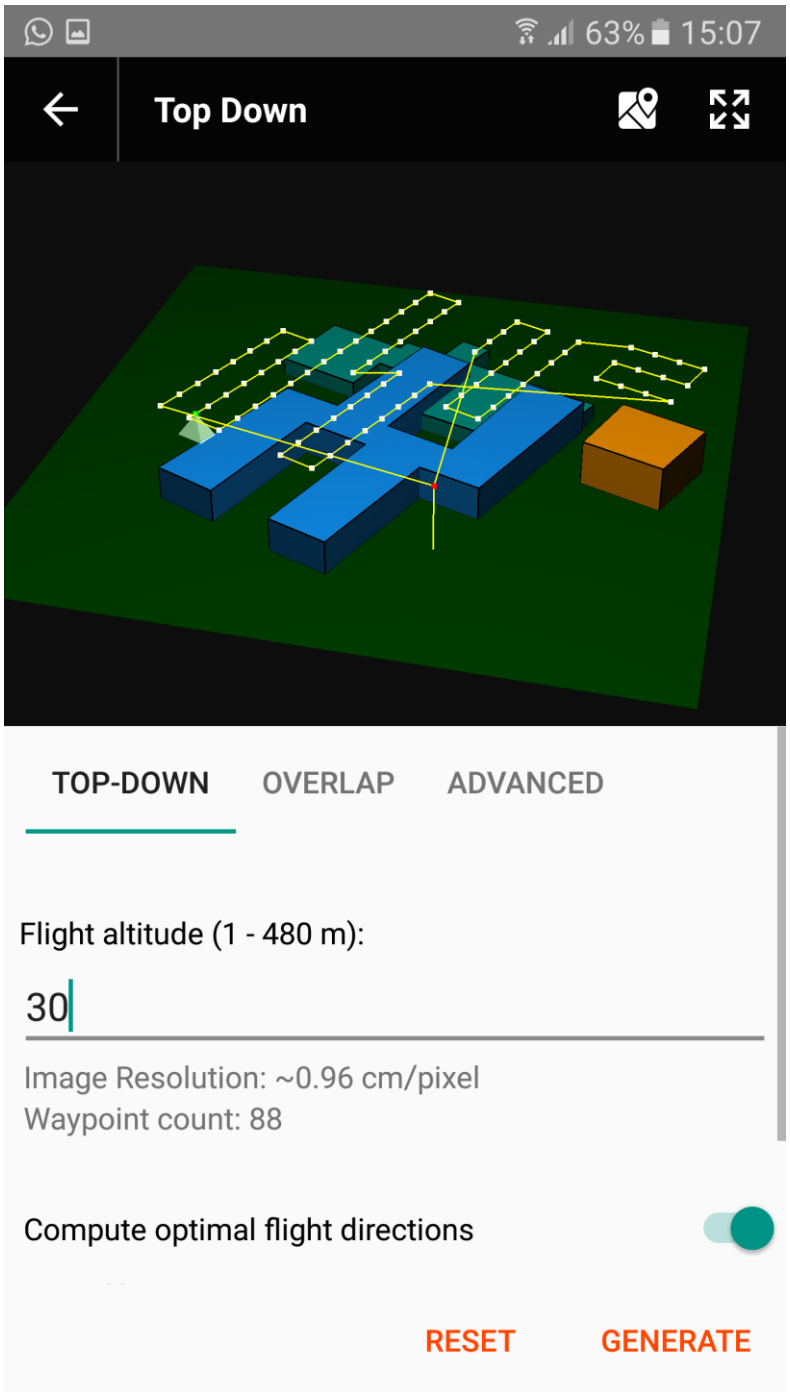
The Top-Down Mission

The Top-Down mission is ideal for gathering data for creating orthomosaics of fields, roofs and other mostly flat structures. It is possible to define a Top-Down mission for both flat and 3-dimensioan scene objects, and also for more than one such object at a time. For example, you can define a mission for mapping three different fields, separated by other fields or roads, or inspect with one Top-Down mission 5 different roofs of building, all being of different heights. You can control many parameters of your Top-Down mission, including overlaps, ground resolution, flight direction, gimbal angle and more.

For more information on Top-Down Mission see this video and this article.



A Top-Down Mission

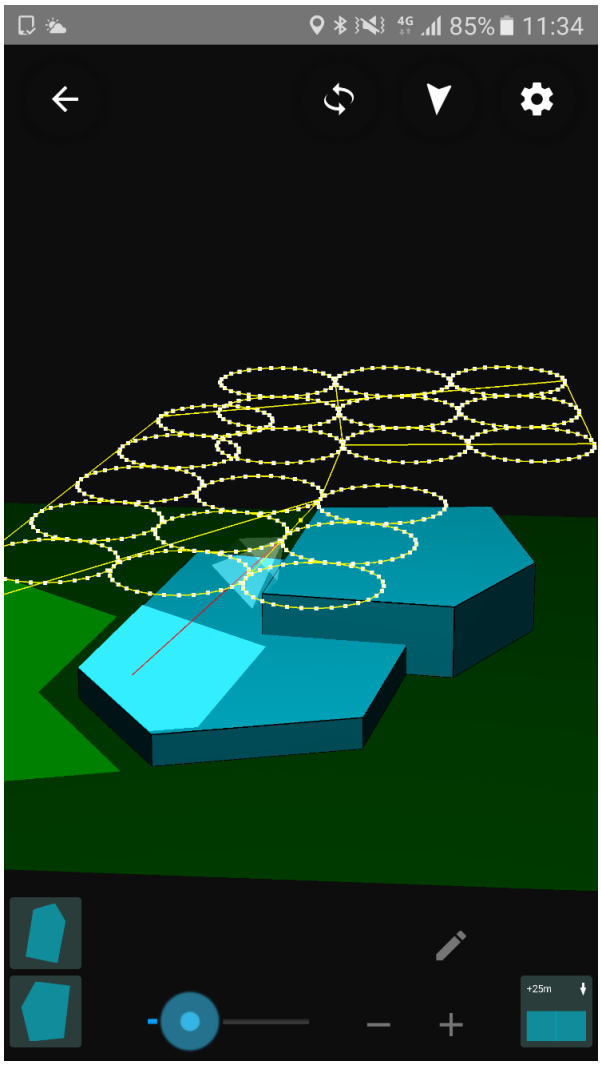


Generating a Top-Down Mission

The Mapping Orbits Mission

Mapping Orbits are excellent patterns for generating 3D models of large structures or collections of structures. Use cases include 3D modelling of cities or neighborhoods, large industrial facilities, as well as generation of accurate point clouds of terrain.

It is recommended to use Mapping Orbits whenever the scene contains many occlusions and it is necessary to obtain good 3d detail in the occluded areas. In most cases it is possible to combine Top-Down data with Mapping orbits for ideal results, as Top-Down allows larger coverage with fewer images, while the mapping orbits provide the detail from the oblique images wherever it is necessary. Analogously to Top-Down, it is possible to generate a mapping orbits mission for several scene objects at once.



Mapping Orbits

Terrain Aware Flights

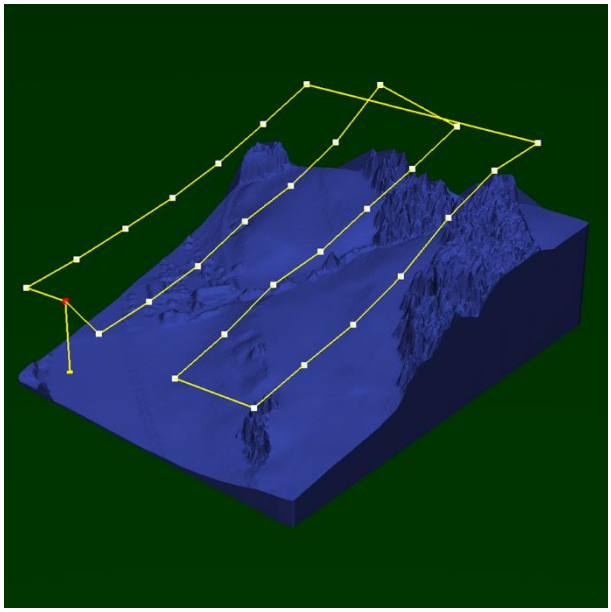
With Drone Harmony you have the option to import terrain elevation data and use it to fly terrain aware flights, namely flights to keep a fixed distance from the ground in uneven terrains. Such flights are very important for accurate mapping of hilly and uneven terrain.

To use Drone Harmony's terrain aware flights you will need to have point cloud data of the area in which you plan to perform the flight. This data can then be imported into Drone Harmony. Once the data is imported and loaded, you can outline a mapping area in the region in space where point cloud data is available and plan a mission. The missions that are compatible with terrain data are Top-Down and Mapping Orbits (the are called Terrain Top-Down and Terrain Orbits).

This page provides a thorough overview and instructions for using the terrain aware flights features in Drone Harmony. For a quick video demonstrating the basics click here.

What if I don't have terrain data for my uneven terrain?

In this case you can first use Drone Harmony and photogrammetry solution to create such data. For a video explaining the workflow click here.



A Terrain Top-Down Mission

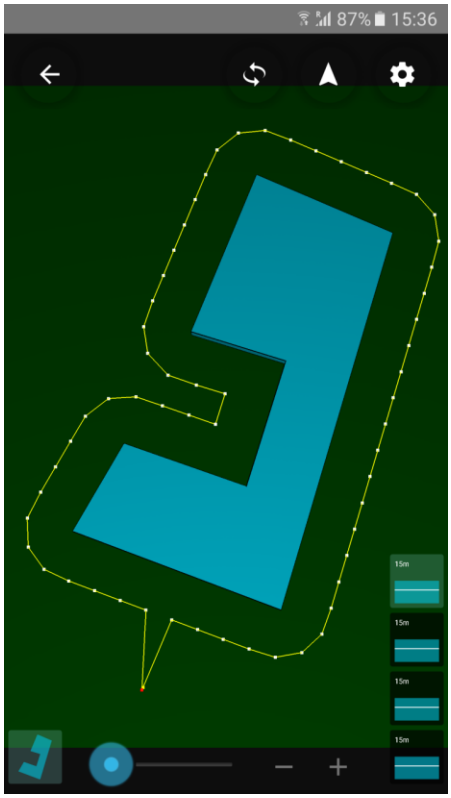
Inspection

Drone Harmony supports a variety of flight tailored for inspection. Roughly speaking such missions can be classified into missions that can be used to scan perimeters of scene objects (or groups of scene objects), and missions that can be used to scan full structures form one or all sides.

The Perimeter, Circle, Ellipse and Convex Hull Missions

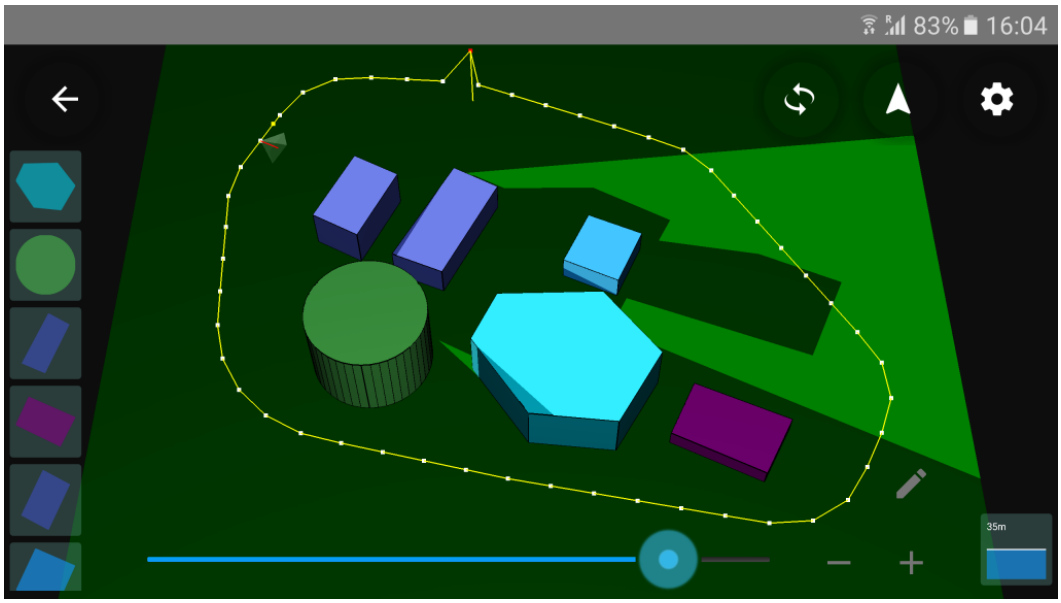
Perimeter flights are used to capture one or more structures from the sides. Examples of use cases include inspecting a line of windows of a house, collecting data from the perimeter of an industrial site, scanning a fence.

Drone Harmony includes four different patterns for flying perimeters that vary by extent to which they follow the outline of the scanned object(s). The tightest pattern is **Perimeter,** which flows the exact outline of the scanned structure, regardless how complex. This plan can be created for a single scene object.

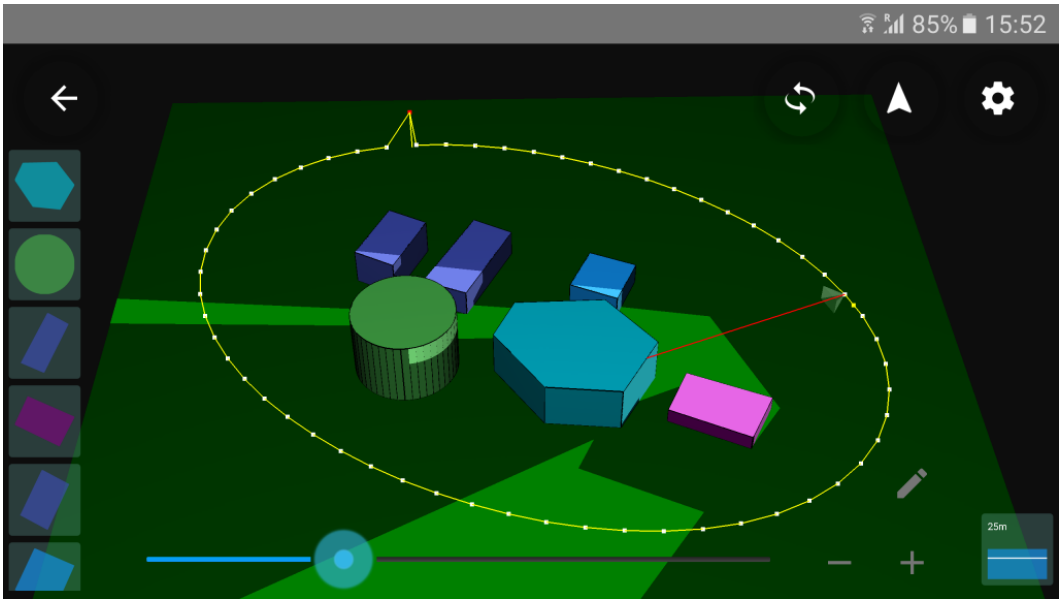


A Perimeter Flight of a Building

In contrast, the **Convex Hull, Ellipse** and **Circle** flights only follow approximately the perimeter and are possible to use for more than one scene object. [This article]() demonstrates the differences between the four missions.



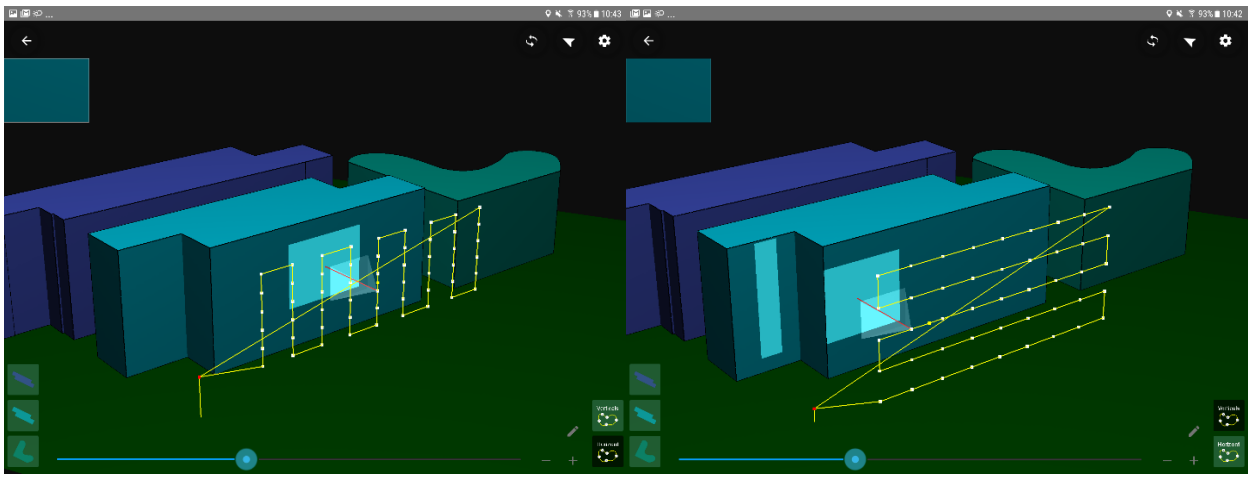
A Convex Hull Flight of Several Buildings



An Ellipse Flight of Several Buildings

The Façade Verticals and Façade Horizontals Missions

There are numerous options in Drone Harmony to inspect and map facades of buildings and other vertical structures. The simplest of those missions are **Façade Verticals** and **Façade Horizontals.** Both missions are defined for a single facet ("wall") of a 3-dimensional scene structure**.** Once a structure and liftoff location is selected for the mission, you will be asked to also choose one of the facets of the selected structure in map view. The remaining workflow is similar to all other Drone Harmony missions. Here is an illustration of the two missions (Façade Verticals on the left and Façade Horizontals on the right).



Façade Verticals (left) and Façade Horizontals (right) for the same wall

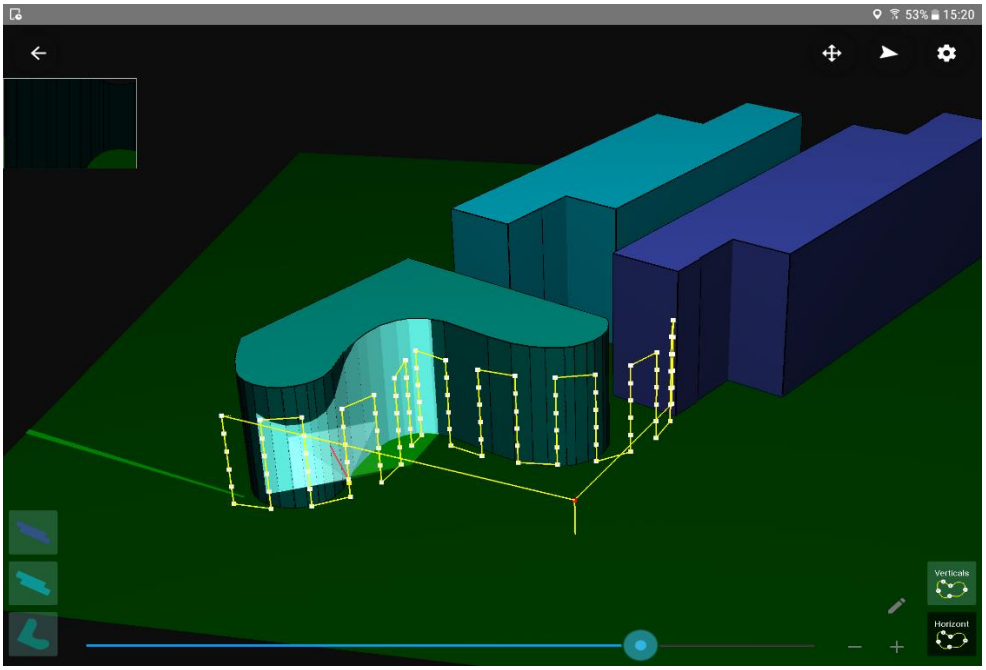
With these missions it is possible to capture any single façade of length of 10 meters (about 33 feet) or more. For capturing smaller facades, use the site mission.

Depending on the environment and capture mode, it may be advised to use either façade verticals or façade horizontals. The advantage of façade verticals is that the lateral movement of the drone is slower and hence for longer walls, it is easier to follow the drone during the automatic execution of the flight. Façade Horizontals might be better for capturing video, or when the scene includes horizontal obstacles, such as shorter buildings.

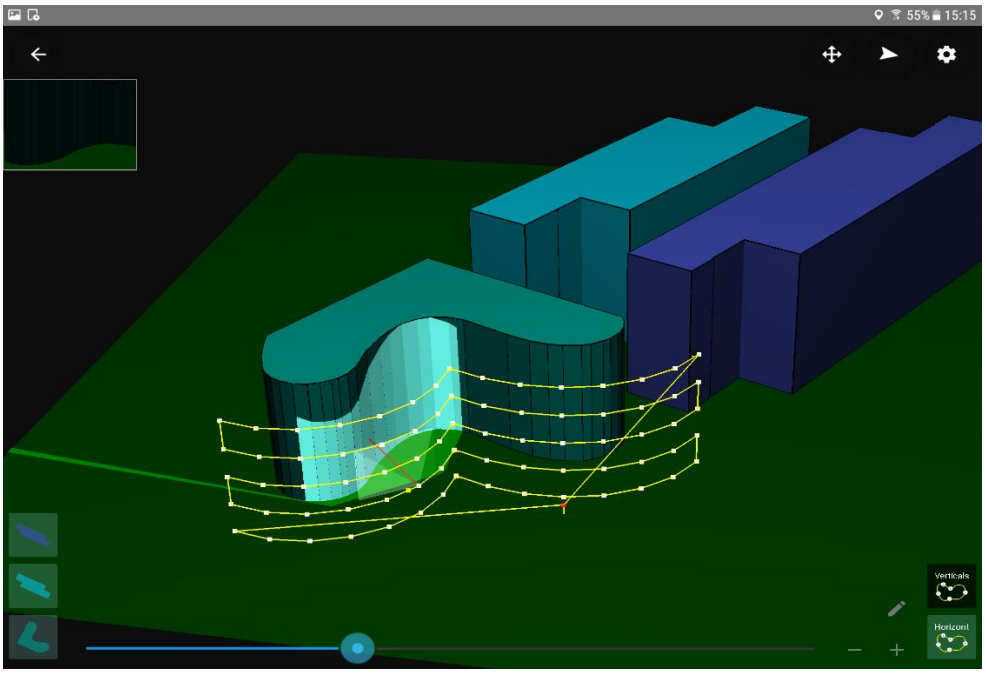
The Perimeter Verticals and Perimeter Horizontals Missions

Perimeter Verticals and Perimeter Horizontals are missions that combine perimeters missions with vertical coverage. They can also be seen as generalizations of the Façade Verticals and Façade Horizontals missions to more than one facet of the structure. Both missions are ideal for modelling and mapping buildings and similar vertical structures.

As for Façade Verticals and Façade Horizontals, the ideal plan to use among Perimeter Verticals and Perimeter Horizontals depends on the environment. In the case of very complex circumferences, we recommend to start with Perimeter Verticals, as they require less effort in following the drone during flight execution. The following two figures illustrate the difference between the two missions.



Perimeter Verticals mission for a complex building



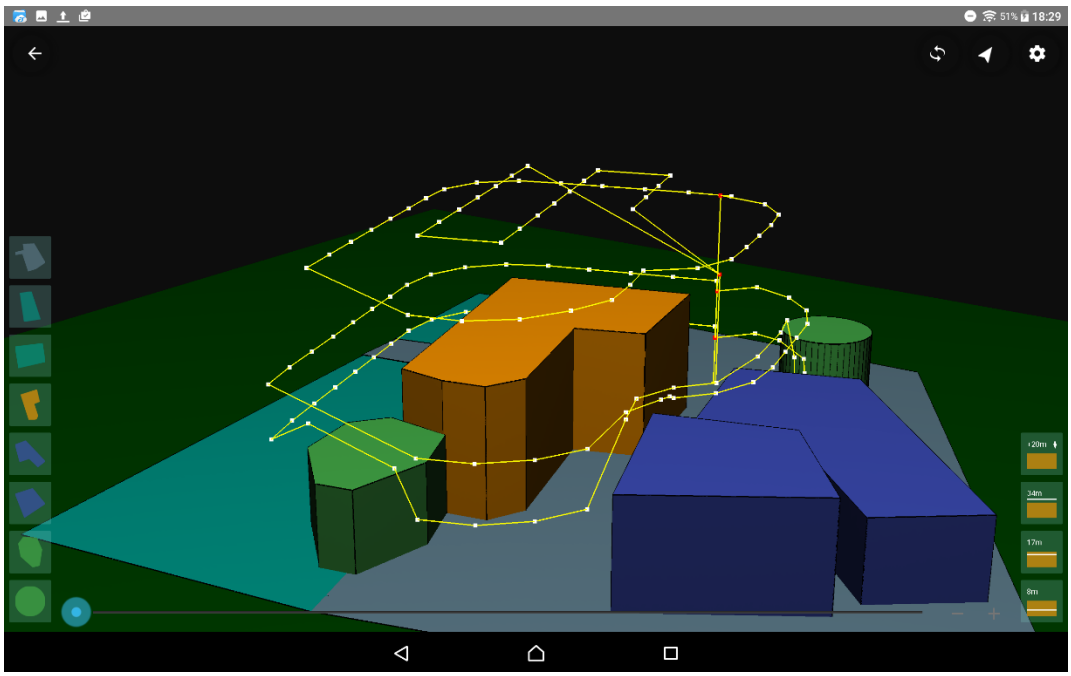
Perimeter Horizontals mission for complex building

The Site and Facade Inspection Missions

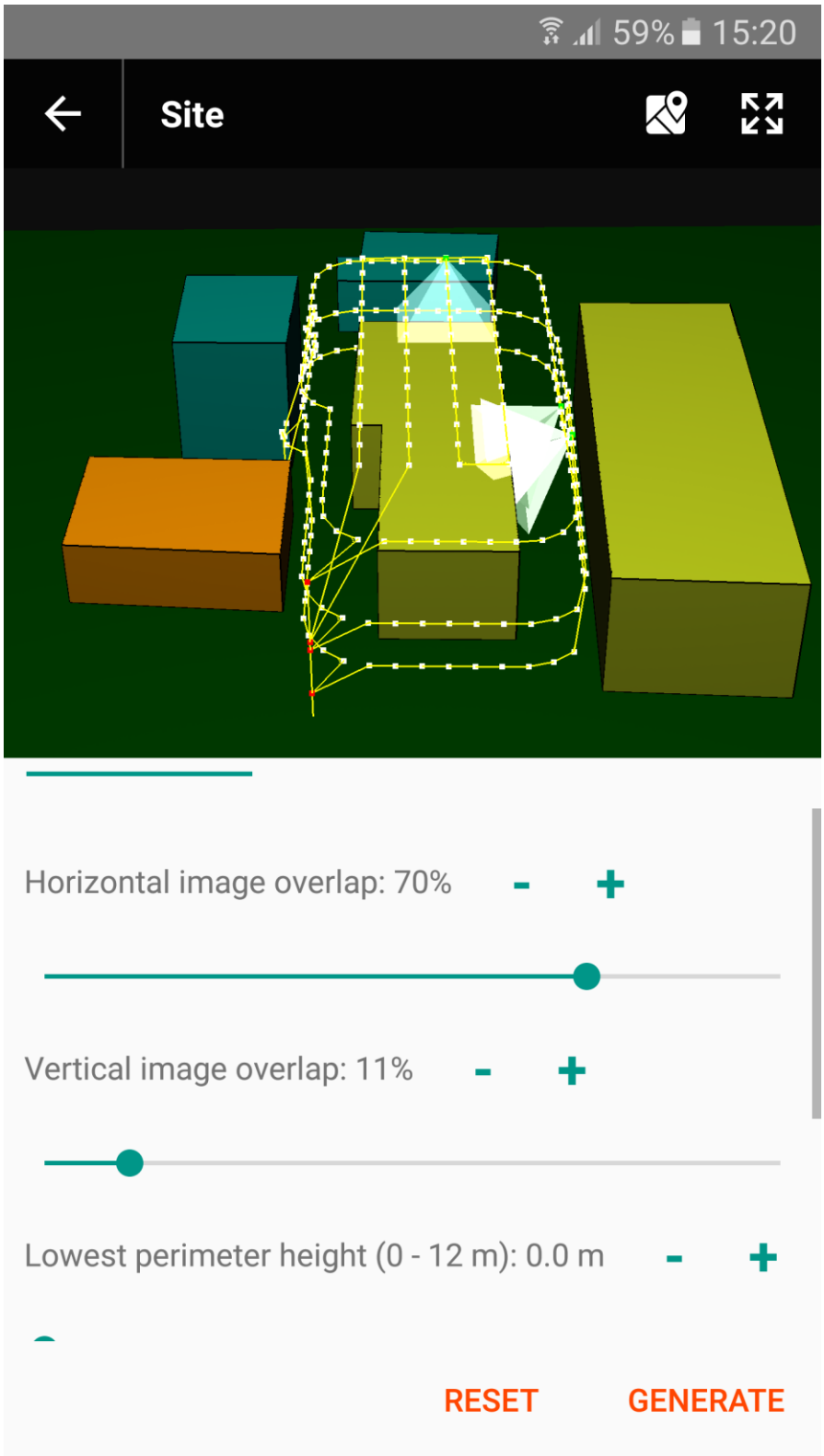
The **Site** mission is ideal for capturing detailed imagery data from a single object, such as a building or a tower. The Site mission is a combination of several Perimeter mission with different heights and gimbal angles and a Top-Down flight for capturing the top side of the structure. It is suited for creating highly detailed 3D models of buildings and for closeup inspections. There are many parameters that can be used to tune the plan, including some that restrict the plan to only a section of the structures' perimeter.

The main difference between the site mission and the Perimeter Verticals and Perimeter Horizontals missions, is that unlike the latter two, the site mission generates **disjoint Perimeter missions at different levels of the structure.** The different Perimeter missions appear as separate missions in the mission menu in map view and can hence be flown separately. In situations where the user might only be interested in inspecting the structure's sides in some of the altitudes, the site mission is hence a good fit, as it simultaneously generates separate perimeter mission for all altitudes.

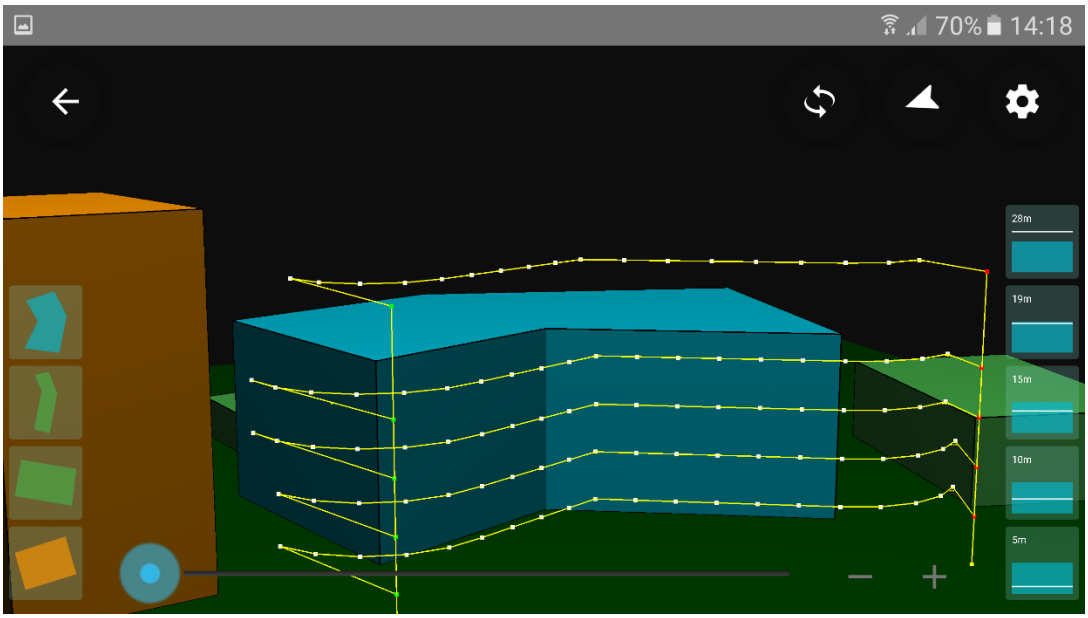
This article gives an overview of different ways you can use Site Scan.



A Site Scan of a Building



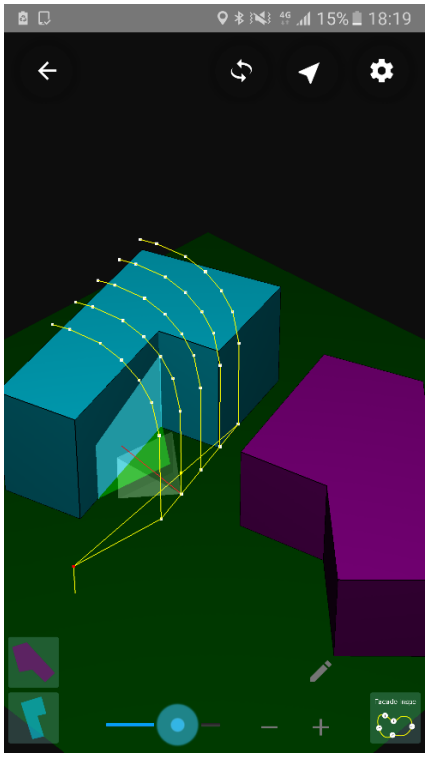
Generating a Site Scan

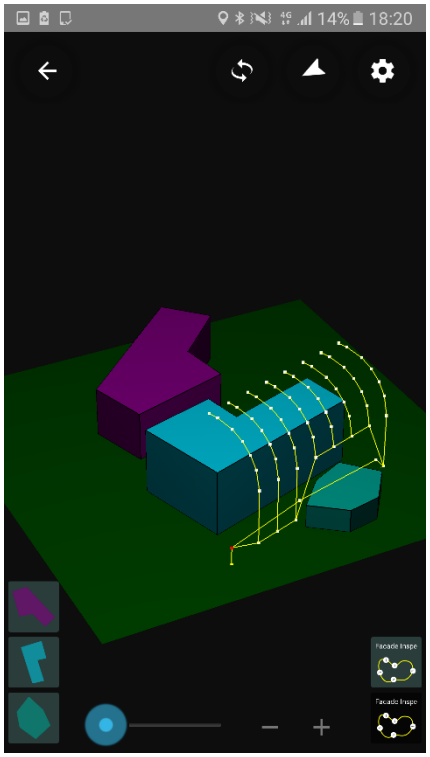


Site Scan of Part of the Perimeter of a Building

The **Facade Inspection** plan is ideal for capturing detailed imagery data of facades, photogrammetry and detailed close-up inspections of walls that have high 3d detail (balconies, sculptures etc.). The difference between Façade Inspection and Façade Verticals/Horizontals is:

1. Façade Inspection missions fly curved verticals that bend over the roof of the inspected structure. The higher images are useful for inspecting the parts of the wall that connect of the roof of the structure. These images are also essential if photogrammetric model of the façade that includes part of the roof is to be constructed.
2. In every vertical of the Façade Inspection plan, images are included with two different camera angles (yaws), both of which are not facing the wall directly. This feature allows to capture more of the 3d detail on the wall and account for possible occlusions.





Facade Inspections

Inspecting Cell Towers

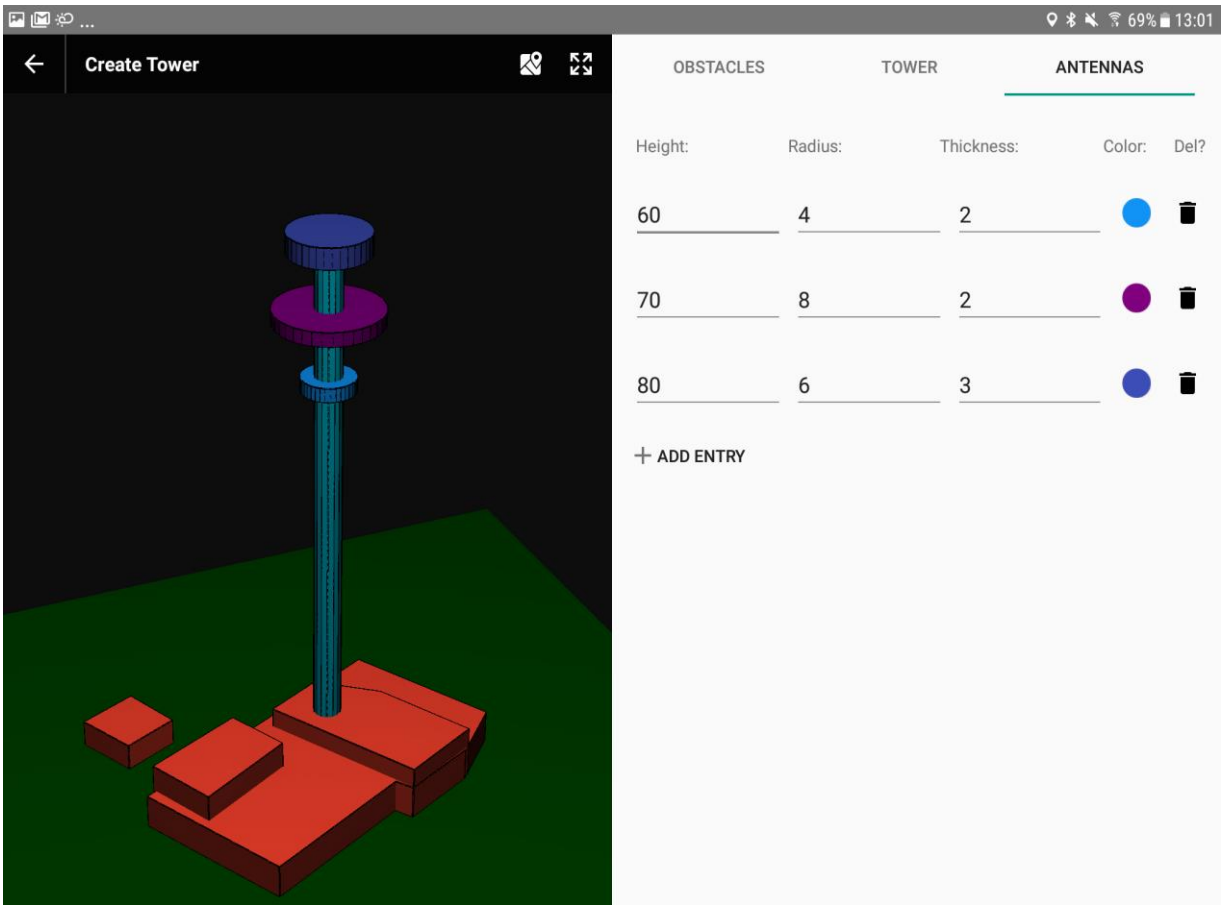
Cell Tower Scan is a skin within the Drone Harmony Plus application that is tailored for inspecting and collecting data around cell phone towers. The workflow of Cell Tower Scan is essentially identical to that of the mapping and inspection skin in Drone Harmony Plus, except that Cell Tower Scan only contains tools and features that are necessary for inspecting cell towers.

Cell Tower Scan

Since Cell Tower Scan is designed for a single task, it contains a simpler and more streamlined scene generation process. Concretely, to create a scene model for the cell tower and obstacles in Cell Tower Scan, we use the Tower Generation Wizard, which walks the user through all the necessary steps. To start the wizard tap on the “+” icon on the bottom right corner of the screen. Then

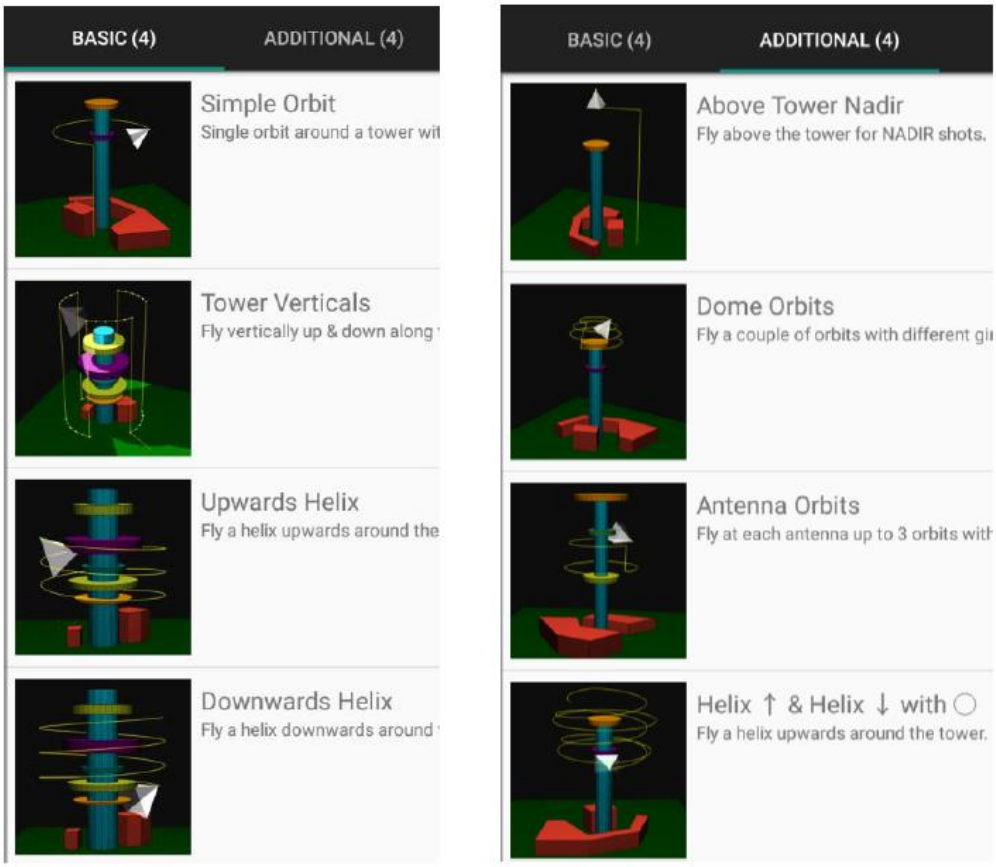
- Select the center of the tower on the map and tap “Next”.
- Use the polygon tool to outline obstacles on the map. You will not assign heights at this stage. Tap “Next”.
- Work your way through the wizard entering in each of the three tabs the required information. This information includes: obstacle heights, tower name, tower height, tower thickness, as well as information about the antennas mounted on the tower: their heights, widths and thicknesses. You can enter any number of antenna levels. Tap “Submit”.

The tower generation wizard includes a 3D interface that visualizes every step of the generation of the model for a quick visual feedback.



Tower Generation Wizard

Once the tower model is created, mission can be generated automatically for the defined tower. The plan catalog in Cell Tower Scan, that is reachable by tapping on the “+” icon and selecting “Create Flight Plan”, contains a variety of flight patterns for flying cell towers for a variety of applications including photogrammetry, visual inspection and more. The process of generating a flight in Cell Tower Scan is identical to that of any other Drone Harmony application.



Plan Catalog in Cell Tower Scan

What flight plans are good for photogrammetry?

If you intend to collect drone data for creating a 3D model of the tower, there are some general best practices you might want to consider. Some of the general dos and don’ts include:

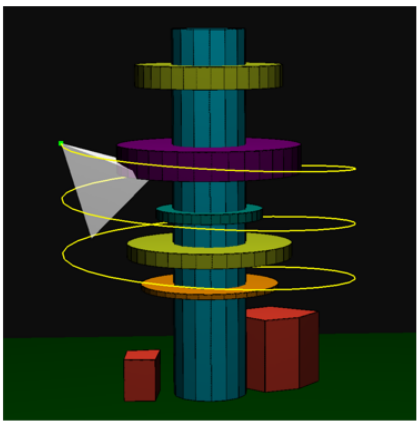
- An overlap of at least 70% at the surface of interest.
- If the ground station is part of the model, some images connecting the tower and the ground compound are necessary.
- Keep the horizon and sky out of the images as much as possible (avoid negative/up-looking gimbals).
- Fly on overcast day if possible.
- Choose the right image resolution for the level of detail you want to achieve (In helix for example, determined by distance from tower and camera setup).

- If you need extra detail around specific parts (like antennas, top part of tower), use a specific mission (like Antenna Orbits/Dome Orbits) to capture some extra images in these places.

In general, you might want to use a combination of two or three Drone Harmony patterns for best results. Here are some combinations that we know can work well.

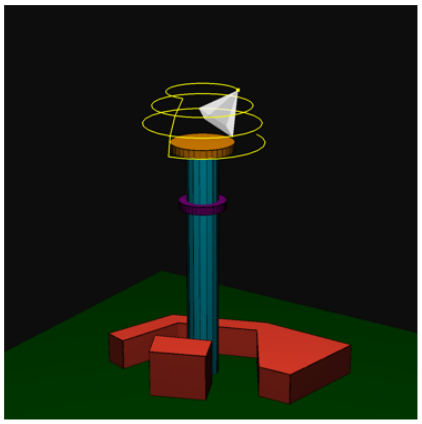
Example 1

Helix (1x/2x)



Distance to tower: 5-8 meters
Overlaps: 75%
Gimbal Angle: 0 deg + 30 deg

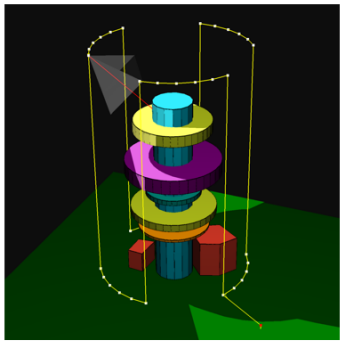
Dome Orbits



Radius: 5-8 meters
No. of Orbits: 4-8

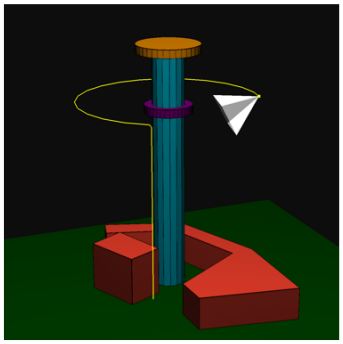
Example 2

Verticals



Distance to tower: 5-8 meters
Overlaps: 75%
Gimbal Angle: 0 deg + 30 deg

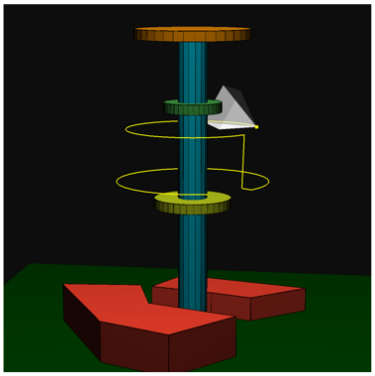
Orbit



Radius: 5-8 meters

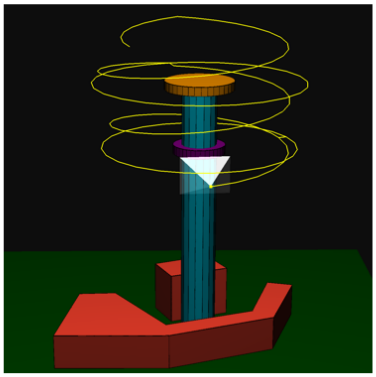
In case additional detail is needed around the antenna levels (e.g. is the antenna components need to have high detail in the model), you can additionally or alternatively use the following missions.

Antenna Orbits



1-3 Orbits around each Antenna level with up to 3 different gimbal angles

Compound Flights



Combinations of Helix and Orbit type flights

In general, the exact type of mission that is suited for your needs might depend on the environment and the purpose of data acquisition. If, for example, the tower is hard to walk (circle) around, a “Verticals” mission might be better than a “Helix” mission, in case visual line of sight must always be kept with the drone.

Flying an Automatic Mission and Calibration

To fly an automatic mission in Cell Tower Scan you will first need to **calibrate the center of the tower**. The calibration mission is extremely important due to the close proximity at which such missions are flown. It allows to simultaneously account for the following errors.

- Error in placing the center of the tower on the map during the tower generation process.
- The drone GPS shift.

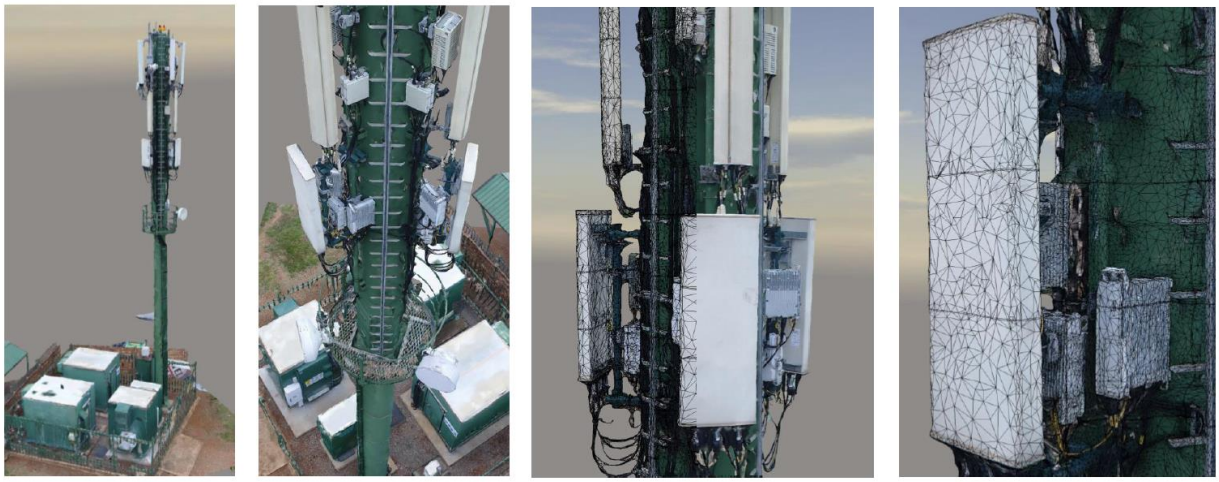
The calibration mission amounts to flying the drone above the center of the tower. You can do this manually, or by using another Drone Harmony mission. Once the drone is above the tower and the calibration run is underway, the user is asked to use the sticks to position the drone as accurately as possible above the tower center and press the C1/C2 buttons to record the position. Grid lines help the user locate the center. The user is then presented with an image taken from the drone camera

and can approve the calibration run, or re-run it. Once the calibration is approved, Drone Harmony automatically adjusts the positions of both the scene and the missions accordingly and the user is then able to start flying an automatic mission. There is no need to land the drone before starting the mission. It is important that the drone camera is facing downward (gimbal angle 90 degrees) during the calibration run.

Apart for the need in calibration, flying a Cell Tower Scan mission is identical to flying any other Drone Harmony mission.

Additional Tips for Flying Cell Towers

- Set an action for the situation in which Radio signal is lost. Letting the drone hover in place, or continue the mission are the options you have.
- Understand the level of both Radio and GPS interference around your tower before planning a very close-range mission. You can do this by planning a far mission and observing the interference when the drone is passing in front of antennas.

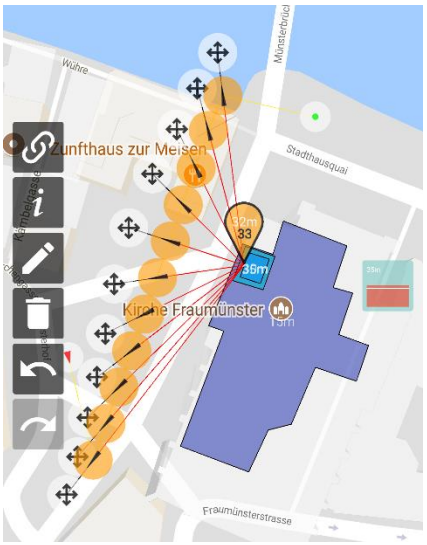


Example Model (ContextCapture). Curtesy of iGlobe Group (SA)

Additional Tips

Use Points of Interest (POIs)

Drone Harmony supports points of interest (**POIs**). POIs are locations in space that the user can define and use to easily direct camera angles of waypoints to these locations.



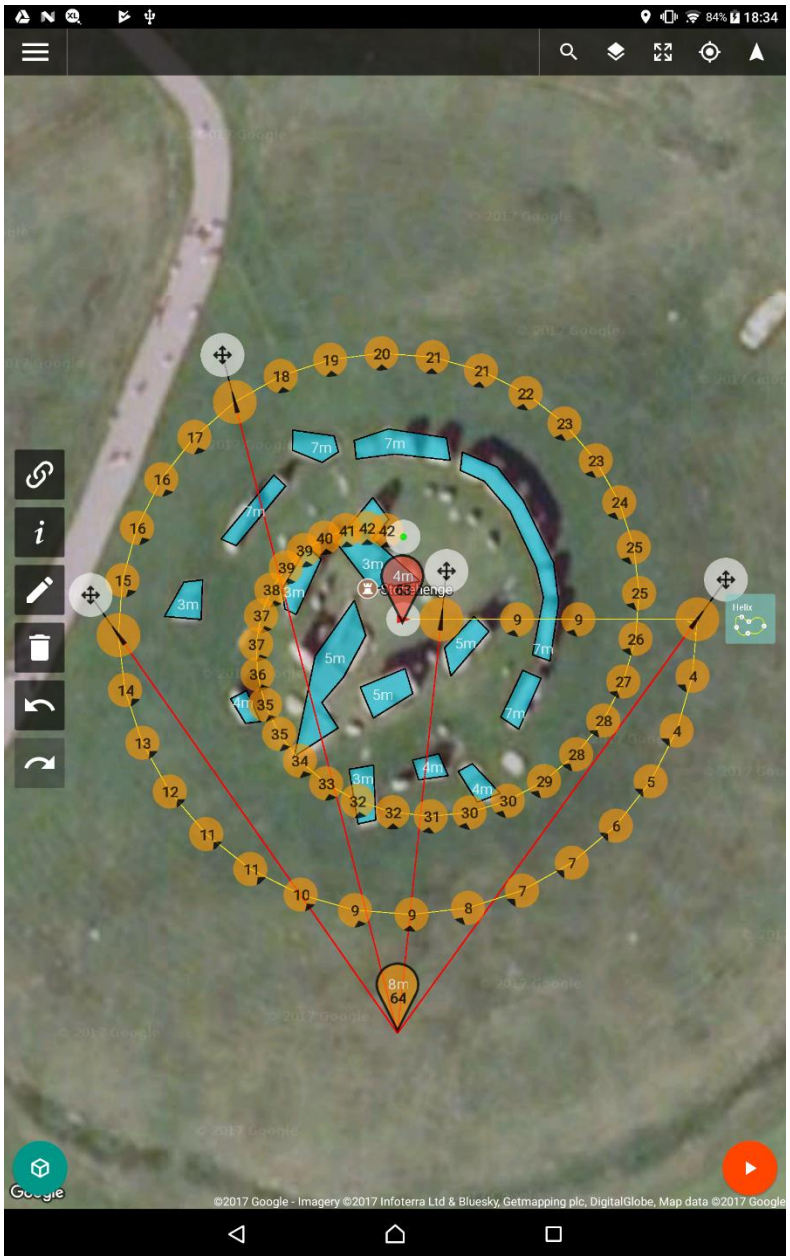
Point of Interest

It is possible to define any number of POIs and it is easy to apply a POI to any number of waypoints at once (or to complete missions at once). This article explains Drone Harmony POIs.

Familiarize yourself with the tools and options.

Drone Harmony has a vast variety of usability tools that improve the working experience and save time. They include:

- **Undo/Redo** of every action in the planning phase
- **Fully adjustable waypoints:** you can select one or more waypoints in any mission and adjust them individually, or in batches in any way. See this video for more in depth information on working with Drone Harmony waypoints.
- **Fully adjustable scene:** you can adjust the corners and edges of every scene object by tapping on it map view.
- Explore the **edit options** by tapping on the pencil tool: the menu on the left in map includes a pencil tool that allows to edit any aspect to the selected item (waypoint(s), scene object, mission etc.). These options can save you a lot of time as they contain many useful shortcuts tools.
- **Need to fly smoothly through a number of well aligned shots?** Use the “smooth” option for your waypoint mission or use the “by flying” mission from the mission catalog.
- **Need to line up a waypoint in an accurate way?** Select the waypoint in 3D view by selecting the corresponding and using the slider below. Then tap on the pen icon on the bottom right to open a fine-grained edit toolbar. Use the toolbar and the 3D visualization to align the shot.



Accurately Adjust Waypoints

Sharing flights and mission.

You have several options within Drone Harmony to store, load and share states of the app (including the scene, missions and flights). A convenient way to share missions and plans with colleagues is to use the “Export” option form the menu. This option allows you to share a state file (e.g. per email). This file is attached to the message and sent to the selected recipient, which in turn can open the attached file on his mobile device to load the shared state directly in Drone Harmony.

Set your defaults

To work even faster with Drone Harmony, take a minute to set some default settings. You can set defaults for camera/drone model, distance units, map type, minimum distance to obstacles in mission planning and more.

Using a custom camera with the DJI M600?

To allow Drone Harmony to plan perfect flights for your setup, use the “Custom Camera (M600)” parameters in Menu -> General -> Settings to specify the camera parameters. This way all overlaps and resolutions will be computed correctly for your camera when planning missions.

Safety

Drone Harmony has a variety of build in safety features. However, it is always important to follow the execution of the automatic flight. Several common reasons for crashes include forgetting to outline important obstacles in the scene before plan generation, drift in flight due to bad GPS reception, weak radio signal etc.

In any case, if you feel that the drone is about to perform a dangerous maneuver, use the mode switch option of stopping the flight to make the drone hover and see from there. You will be able to restart the mission from the same place if you realize that there was actually no danger. (see “Flying a Mission”).

Particular care should be taken while flying very close to cell tower antennas or tall buildings, as in such situation both GPS and Radio signals can be unstable.

Remember to always monitor the drone’s condition including GPS and Radio signals, battery level etc. All these metrics are always displayed in Drone Harmony when the drone is connected.

For more information on safety see this page.

FAQ

For the official Drone Harmony FAQ see this page. Here are answers to some of the more common questions.

Is there a limit on the number of waypoints a mission can have?

No. However, the DJI libraries only allow to upload 99 waypoints at a time. If you fly a mission with 100 or more waypoints, the drone will hover for a number of seconds in the middle of the flight to upload new batches of waypoints. You should see a message in the app in this case and you should not interfere in such a situation, as this process is automatic.

Are drones other than DJI Supported?

Not at the moment.

Is there a desktop or iOS version?

Not at the moment, but we are working on a web-based desktop version.

Why does the Drone Harmony app ask for permission to use the phone etc.?

The permission are required by the DJI libraries that Drone Harmony is using to control your DJI drone and hence Drone Harmony needs to ask for them as well for the DJI libraries to work. Drone Harmony **does not** make calls or use these permissions directly.

Additional Resources

The are many online resources for learning Drone Harmony. These include:

- The Blog
- The Drone Harmony Website
- The Forum
- The Youtube Channel

Furthermore, you might find the following Youtube reviews useful:

- Overview with extra focus on cinematic features
- Similar Video with additional features presented
- Workflow for creating terrain and then using in Terrain Aware Flights (all using Drone Harmony)

Legal documents:

- Terms of Use
- Privacy Policy

Want to contribute?

- Share ideas for new features and vote for other people's ideas on the idea portal.