

# Scanning Empty & Repetitive Spaces



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## Summary

This document explains how to scan open, empty, and repetitive properties common in **commercial real estate** and **architecture, construction, and engineering** markets. Follow these tips to **make alignment easier** and get the **best quality 3D Space** possible.



More information available at [support.matterport.com](https://support.matterport.com)

- [Quick Start Guide](#) for basic instructions
- [Scan a Space User Guide](#) for complete information
- Search [support.matterport.com](https://support.matterport.com) for other questions

# Prepare the Space



These guidelines will make scanning easier. However, because every property is different, these are suggestions and not requirements.

## Lighting

### Scan during the daytime

- Usually easiest to get access.
- Nice, scenic views from the windows and outside.

### Minimize bright, direct sunlight

- If you arrive in the morning, scan the **west side first**.
- If you arrive in the afternoon, scan the **east side first**.
- Open blinds & curtains to let the sun in for natural lighting, but close or cover them if the sun is too strong.
- Areas lit by bright, direct sunlight can be scanned but will result in poor Dollhouse and Floorplan Views.

### Turn on all the lights you want before starting

- Lights may automatically shut off at night.
- The Matterport camera uses HDR (high dynamic range) to balance uneven lighting, but it's best to avoid extremes.

## Populated Offices



Remove everything confidential or it will be photographed.

### Hide private and confidential information

- Erase whiteboards
- Hide personal items inside drawers
- Turn off computer monitors
- Cover things up with white opaque paper

### Organize furniture or stage area professionally

- Push in chairs
- Line up desks so they are uniform
- Clean up

# Scan the Site

## Normal Scanning



[Learn how to scan in 10 easy steps](#)



[Scanning Best Practices for Long Term success](#)



[Learn how to scan, edit, and manage your Spaces](#)



Mark windows and mirrors after every scan. This reduces alignment errors and improves the quality of the finished Matterport Space.

## Make a Plan

The Matterport camera excels in areas with **non-repeating architecture**, areas with **furniture**, and areas with **unique visual features**. The larger a property is, the less likely it is have these qualities. This make scanning difficult since **alignment is hard in these places**. Therefore, it's even more necessary for you to **make a plan and set expectations** when you scan these places.

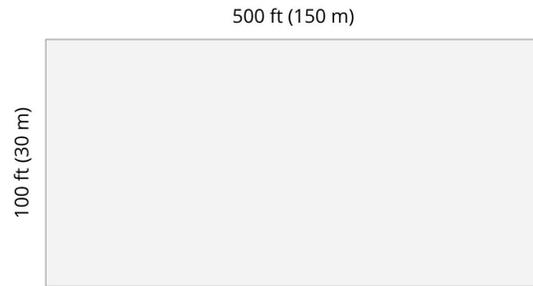
Type of Space	Approximate Area	Preparation
Office and retail	Up to 10,000 ft <sup>2</sup> or 900 m <sup>2</sup>	Basic scanning preparation
Light industrial	10,000 to 25,000 ft <sup>2</sup> or 900 to 2250 m <sup>2</sup>	Plan a rough path and skim over this guide
Empty warehouses, convention centers, hotel banquet halls	25,000 to 50,000 ft <sup>2</sup> or 2250 to 4500 m <sup>2</sup>	Plan a well-defined path and be very systematic

## Scanning Large Open Spaces

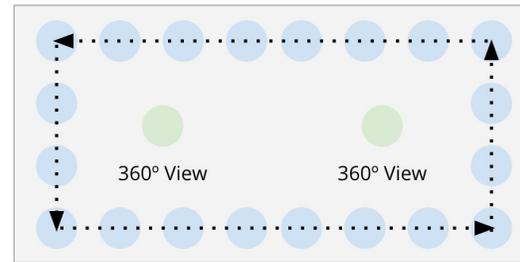
For example, consider a very large 50,000 ft<sup>2</sup> (4500 m<sup>2</sup>) empty warehouse.

Scanning this large space in a zigzag pattern is possible, but would take too long and is prone to misalignment in the center of the space.

Instead, **scan along the perimeter** of the space. Then **take 360° Views in the middle** to get a sense of how big it feels.

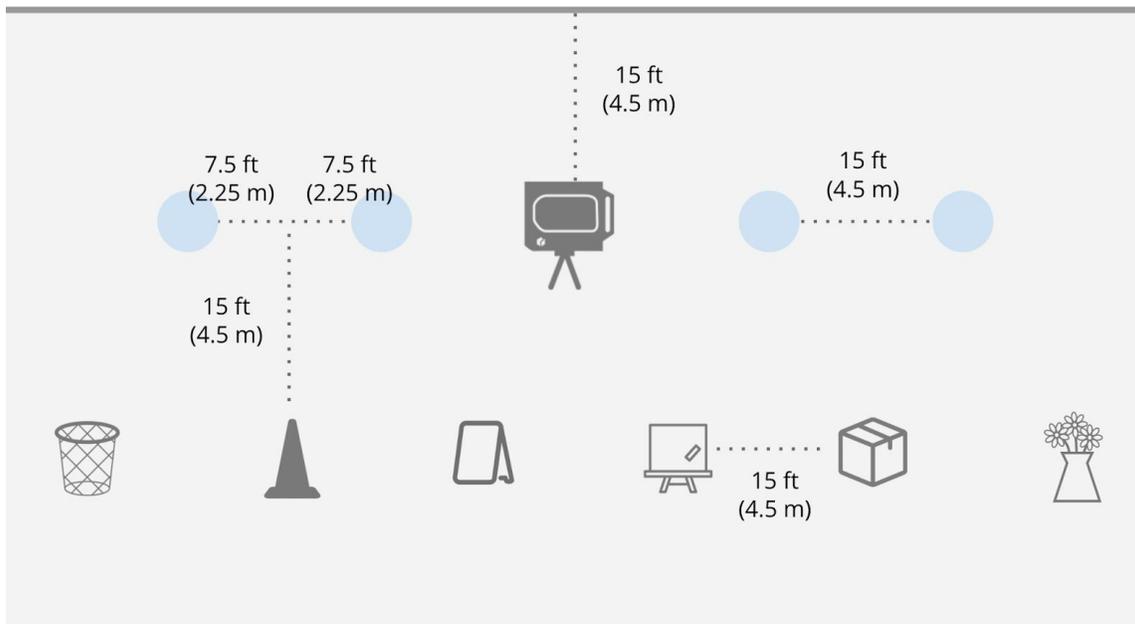


Zig-zag  
Not recommended



Perimeter with 360° Views  
Recommended

When you scan along the perimeter (and in areas with few unique features) **use 6 to 8 unique 3D objects**. Objects help *immensely* if you have [alignment issues](#).





Use a measuring tape and post-it notes to **plan where each scan location will be**. Objects do not require millimeter placement, but a grid-like scan path will make your finished Space more professional.

### Unique Objects

These can be anything you have available. Choose items that are:

- Lightweight and easy to move
- Unique and different from each other
- Company branded if possible as a “physical watermark”

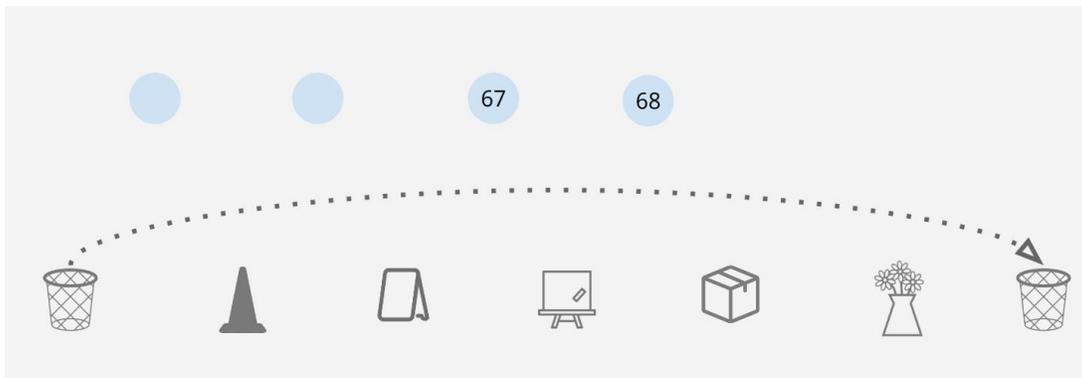
Examples include:

- Poster on easel
- Folding chair
- Sandwich board
- Empty trashcan
- Vase with flowers
- Fabric folding storage boxes
- Cardboard boxes (each box in a **random orientation** to be unique)

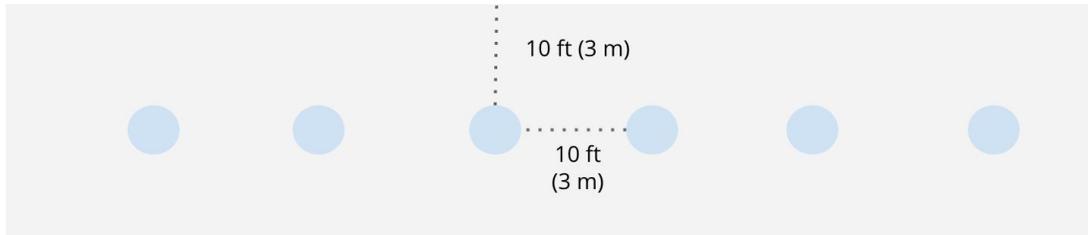


As you scan the space, **gradually move the objects** along with you. **Do not move all of the objects** at once.

In the picture below, we just finished scan 67. Now we'll move the trashcan ahead a spot. Place the camera in the right spot for scan 68 and scan. Repeat this process.



If you don't have unique objects, you can **scan directly along the wall**. However, you will have to **shorten the distance between scans**. This will increase the total number of scans as well as total scanning time.



## Scanning in the middle

For large properties, the middle is usually empty. This is a great opportunity to switch to **360° View** mode and capture. 360° Views are just like 3D Scans, but they are unaligned — they are not connected to other scans. [Learn more](#).

If there is a room in the middle, such as a server room or a bathroom, you may want to capture there. For these cases, you have two options:

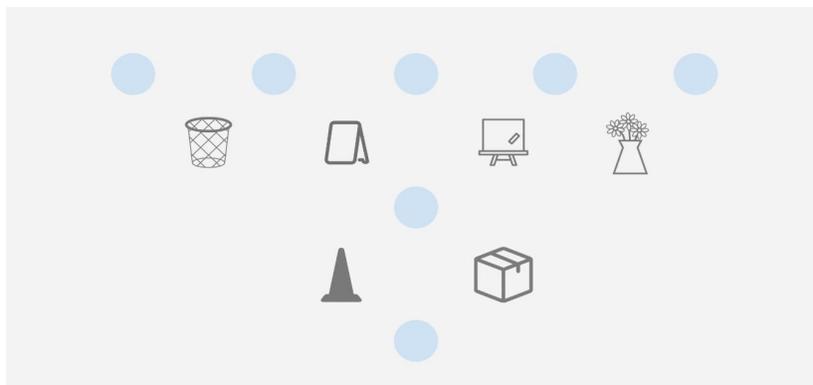
### 1) Make a new model and scan this room

- Only a small model with a few scans
- Fast and easy to accomplish
- You have two or more models to manage within your company's system

### 2) From the perimeter scan up and into the middle

- Keeps everything within one model
- Easier to track within your company's internal system
- Takes more time to scan

For the second technique, follow a pattern like this to move from the wall to the middle.



Once inside the middle room, return to **5 to 8 feet (1.5 to 2.5 m) between scan locations**.

## Hallways

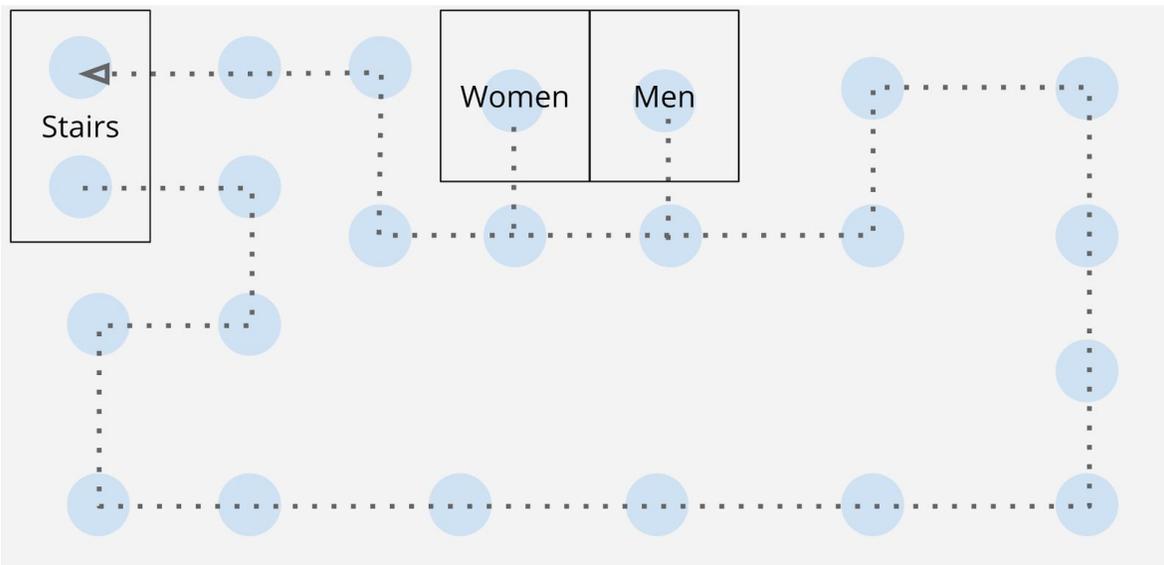
For repetitive, uniform, and long hallways (longer than 50 ft or 15 m) place **a unique object at about every 15 ft (4.5 m)**. Also add a unique marker at each end of the hallway and one at about 40% and 60% of the way through the hallway.

These objects assist alignment so that the **Matterport Capture** app will not “compress” the hallway and make it shorter than it actually is.

## Floors

For **very large buildings** where every floor is empty and uniform, we recommend **creating a new Matterport model for every floor**. If the space is not too large you can fit all the floors in one model and include the stairs too. [See an example.](#)

Generally, we recommend starting at the door to the stairwell, propping the door open, and scanning the entire floor first. You will end up back at the stairwell.



Then scan up the stairs. The stairs will belong to the floor you just completed. Once you get to the top of the stairs, [start a new floor in Matterport Capture](#) and continue scanning.

When scanning multiple floors, remember to:

- Move yourself around the building using the stairs, not the elevator.
- Don't trigger the fire alarm by accident. Don't disable the fire alarm to scan stairs.
- If the building has multiple stairwells keep it simple and only scan the main stairs.

## Commercial Real Estate Amenities

Amenities are the parts of your space that truly affect how a person feels while there. Ultimately they're what **defines a tenant company's culture**.

In addition to your normal scans, **add an extra scan or two** in front of important items where your visitors will want a closer look. For example:

- Common areas such as the cafeteria and game rooms
- Executive offices
- Conference rooms
- Lobbies
- Electrical, telecom, and server rooms
- Outdoors
  - Use **360° Views** to capture outdoor amenities like gardens, eating areas, terraces, basketball courts, etc
  - Capture a great **Hero Image** -- an amazing shot of the front door, building exterior, and any street signage



Scan the bathrooms too! If you don't scan there you will have holes in your Dollhouse and Floorplan Views.

# Scanning Time

Each scan takes about 60 seconds. This includes:

- Tapping the **Capture 3D Scan** button within the app
- Rotating and scanning by the Matterport Camera
- Transferring data from the camera to the iPad
- Aligning the scan to previous scan data plus a quick check for misalignment
- Moving the camera to the next scan position

For very large spaces, you gain some efficiency as you learn how to scan faster. However, with more scans you can also lose efficiency. Watch out for:

Pitfall	Resolution
<a href="#">Misalignments</a>	Look at the preview pane after every scan to make sure the scan position <b>is the same in software as it is in real life</b> . Do not continue if <a href="#">there is a misalignment</a> .
Boredom & Distractions	Safeguard against boredom by playing music or talking on the phone while scanning. Don't get too distracted or you might appear in the scan.
Fatigue	Take rests when necessary. Bring water and snacks.
Intrusions	If you or other people appear walk in front of the camera, <b>cancel the scan</b> before it completes. After the scan is done, <a href="#">tap the scan number</a> to preview the scan to see a human appeared.

# Alignment

Every Matterport Space is a set of scans. Each scan is a set of 2D and 3D data gathered from one location. This data must be **aligned to each other** in order to create a complete, finished 3D model.

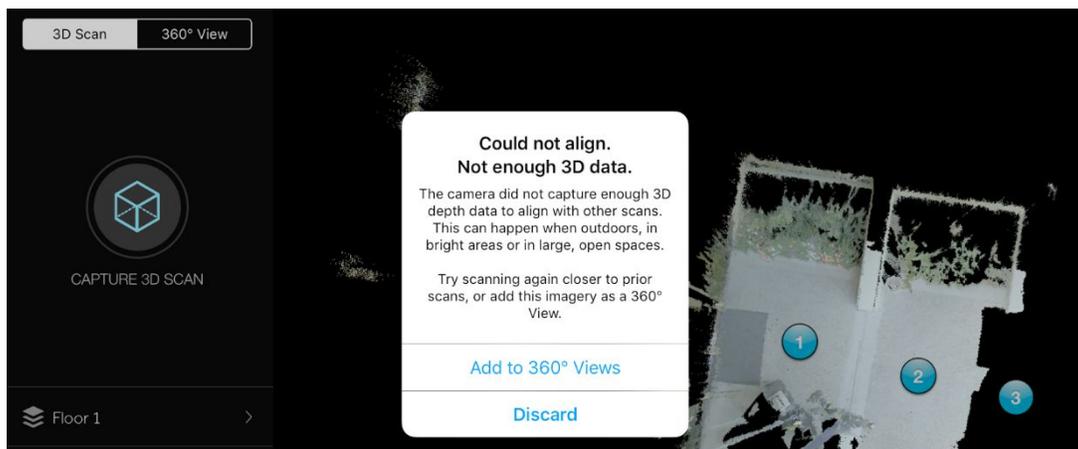
The first scan exists as a single point in space. Every subsequent scan is aligned to a previously completed scan. A scan that is properly aligned means that it is in the **same location in software as it is in real life**.

Generally, Matterport Capture looks for alignment by overlapping the 2D and 3D data and searching for areas of high similarity. No GPS data is used for alignment.

If there is no overlapping 3D data, this leads to an **alignment error**. If there is 'too much' overlap or incorrect overlap because the space is very uniform, this is a **misalignment**.

## Alignment Errors

An **alignment error** is when the Matterport Capture app cannot align the last scan any of the previous scans. Matterport Capture will notify you when this happens.



To recover from an alignment error, **reduce the distance from a previously completed scan by half** and try again.

If this doesn't work, **delete the most recent scan** and scan over that spot again. Repeat this process until you have recovered alignment.

# Misalignments

A **misalignment** is when the Matterport Capture app thinks it aligned the scan, but it actually placed the scan in the wrong spot.

In the picture below, the app placed scan 7 between scan 5 and scan 6. However, in real life scan 7 was out where the orange circle is. This is a **misalignment**.




The app does not know when it has a misalignment. Therefore, it is **essential** that you frequently check for misalignments, **especially in open and repetitive spaces**.

Misalignments can cause problems after uploading the model for processing. Too many misalignments can result in an unusable model.

To recover from a misalignment, first **delete the misaligned scan**. Then **half the distance to the previous scan** and try again. If this was successful, continue at the normal distance.




Check the iPad **after every scan** to make sure the scan is in the correct place. You may have to zoom in to find the most recent scan. Misalignments **can be easy to miss** after you have been scanning for a long time.

# Processing & Editing

If your model is in the range of **several hundred scans**, consider **splitting the space** into quadrants or regions. Each region can be a separate model in Matterport Capture.

Matterport cannot combine models together as a service. However, it's very easy to embed multiple models on your site — see the [Matterport Gallery](#) or [Matterport Try-It](#) pages.



If you only scanned along the perimeter, remember to go inside Matterport Workshop and **turn off Dollhouse View** so you won't see an incomplete 3D model.

Remember to **turn on Highlight Reel** and add your 360° Views so you can still navigate through the model.

## Contact Us



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