# Working with 3D Data

3D data encompasses spatial information that represents objects and surfaces in three dimensions. SkyDeck offers robust tools to harness the full potential of 3D data through advanced visualization tools, interactive exploration, and analytical capabilities tailored to support informed decision-making and spatial analysis. SkyDeck also allows you to generate detailed 3D models and visualizations from survey data, allowing you to derive valuable insights for various applications including urban planning, infrastructure management, and environmental monitoring.

In this article you will explore:
- **Uploading 3D Model**
- **Visualizing 3D Model**

Uploading 3D datasets

1. Navigate to the Snapshot where you want to upload your data.
2. Click on the **Datasets** button on the top right to navigate to datasets of the concerned Snapshot
3. On the Datasets page, open the **3D Layer** tab and click on the **ADD** icon next to the **Select 3D Layer** option.
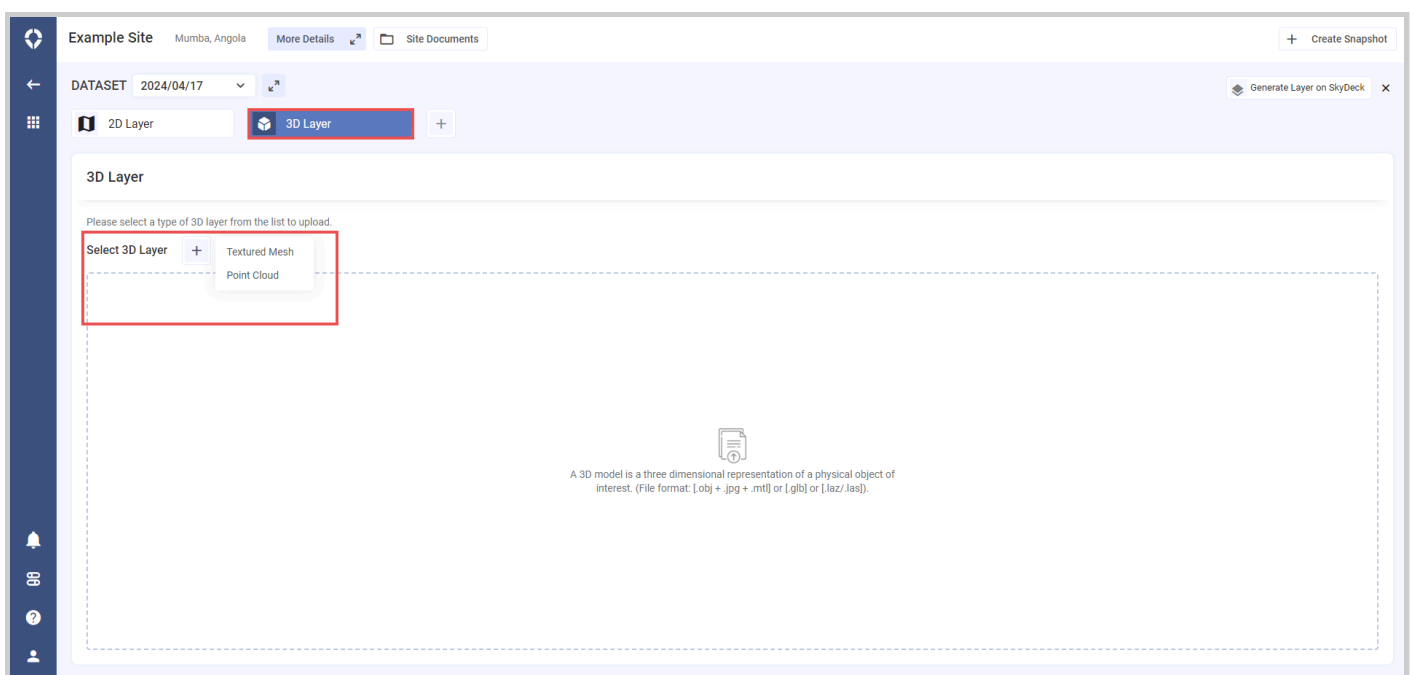
Upload 3D models

4. Select the 3D data type that you want to upload from the list. A new tab for the data type will be added to the datasets page.

5. **Drag and drop** the raster file OR click **Browse** option to attach the file from your system. This will start the upload process.

> You must attach the JPG, OBJ and MTL files to successfully upload a 3D model.

6. You can track the upload progress for the attached file on the right pane.

> Do not leave or close the webpage until the file upload is complete.

7. Once the upload is completed the file will be visible under the Uploaded files section. You can you the **Download**, **Rename** and **Delete** options available in this section to manage your files.

Visualizing 3D data

You can view your 3D data models by navigating to the Snapshot and selecting the **3D mode** option on from top right.

> All data visualized on SkyDeck undergoes a tiling process and optimization for web browser viewing, ensuring efficient performance even when accessing SkyDeck over slower internet connect and on weaker devices.

Layout of 2D data mode
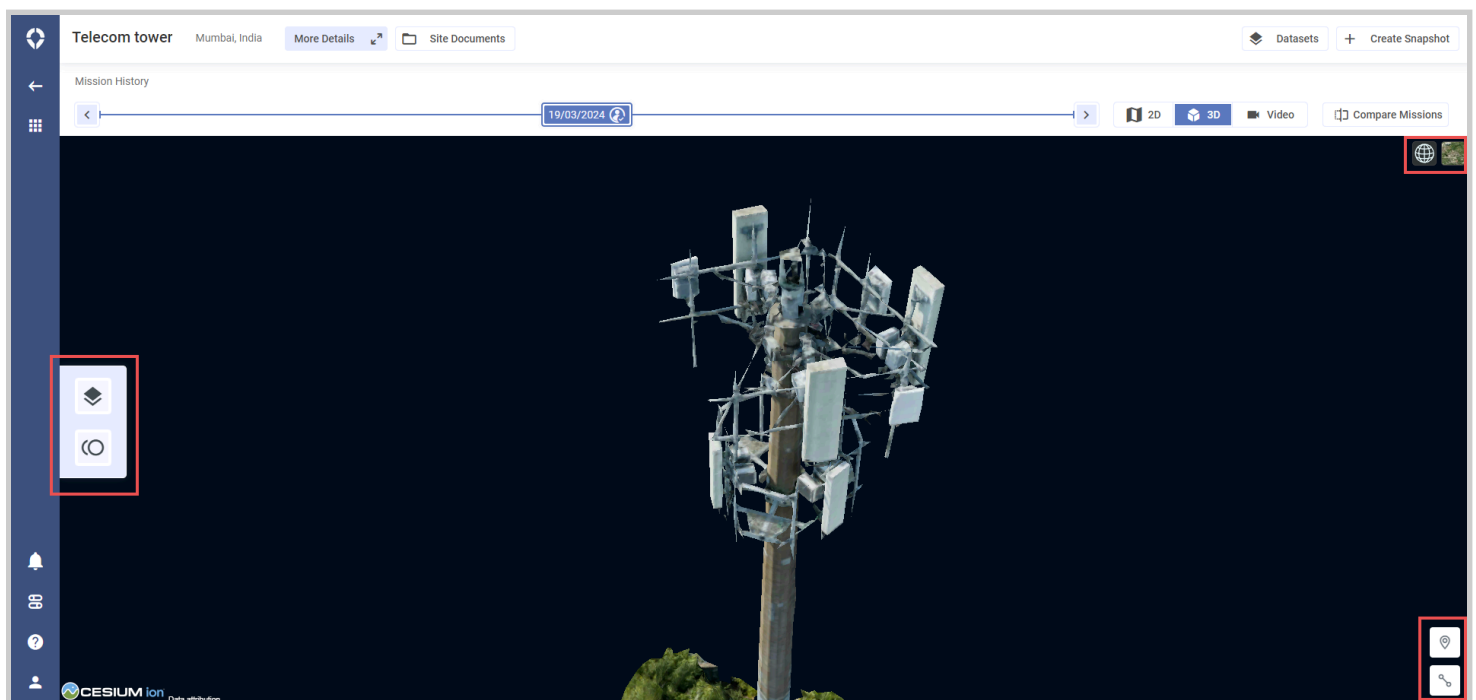
3D data visualization

Key Components of 3D Visualization Mode:

1. **3D Map area:** This displays any created or uploaded 3D dataset overlaid on the base map, providing a visual representation of the data within its geographic context.
2. **Management sidebar**: Allows you to manage and customize the visualized data. This includes managing 3D layers, vector overlays, and 3D annotations.
3. **Annotation tools**: Allows you to create annotations on the visualized 3D data
4. **Map controls:** Enable switching between different modes for the 3D viewer and to select the base layer for the map.
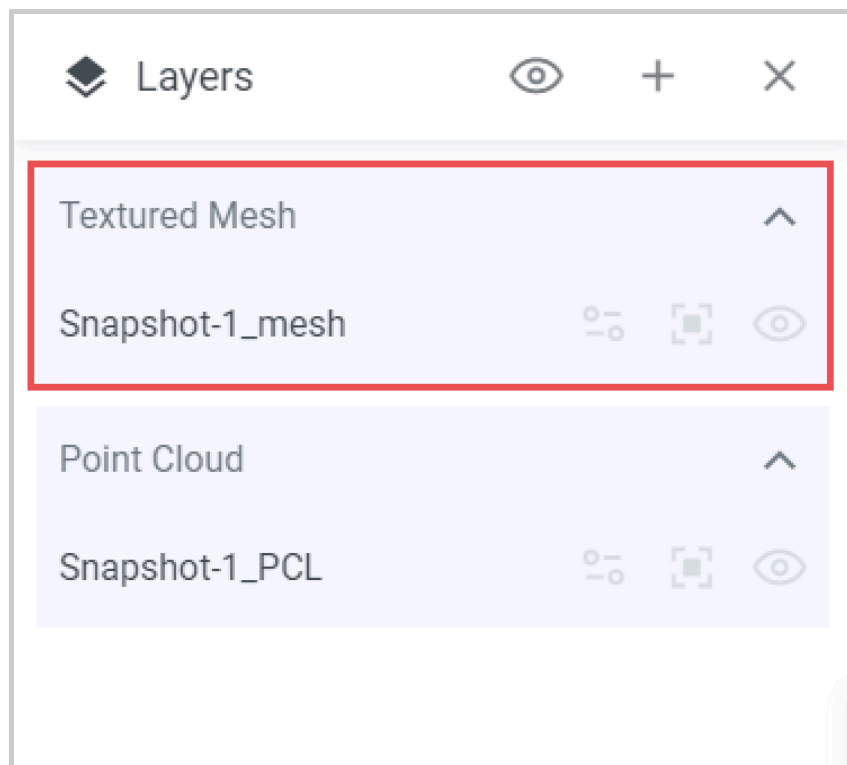
Interacting with 3D models

Use the following controls to interact with the visualized 3D models.
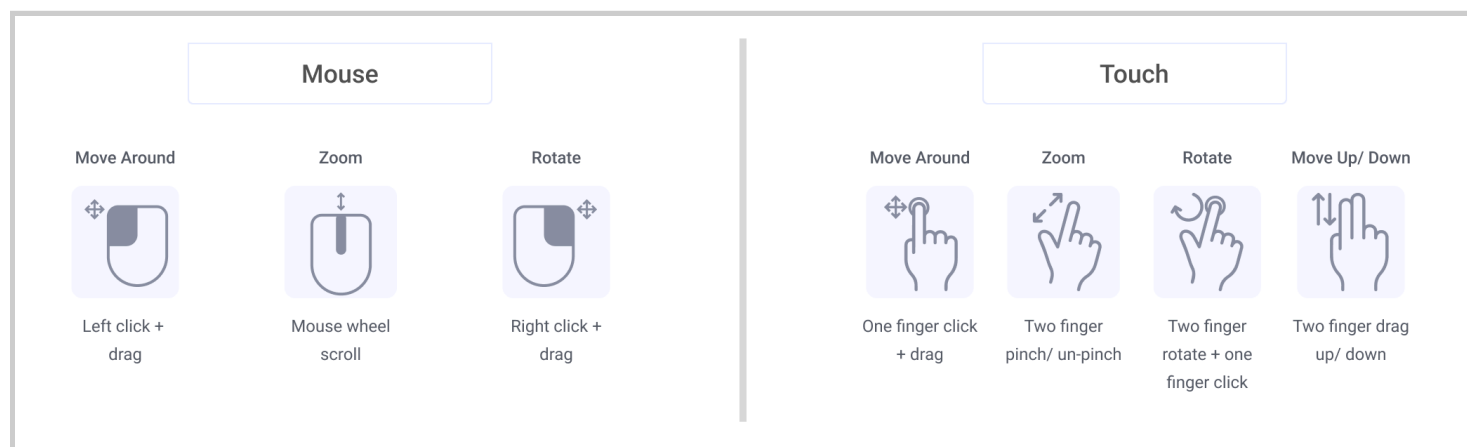
3D interactions

Managing 3D layers

The **Layers** panel from the **management sidebar** can be used to view and manager all available 3D models on a snapshot.

3D layer management

The following options are available:

Option	Description
Customize visualization	This option lets you change how the data is visualized
Show/Hide All	This option can be used to show or hide a specific model, or all the models under a section
Refocus	This option can be used to focus the 3D viewer camera on the selected model

Customizing how 3D data is visualized

Click on the customize option to change how the model is visualized.

3D model settings

The following options are available:

Option	Description
Select model	Choose the layer you want to customize from the drop-down menu.
Focus	Focus 3D viewer on selected model
Visibility	Toggle the visibility of the selected layer on or off using the show/hide icon.
Position	This option positions a 3D model on SkyDeck's map based on the entered latitude, longitude, and altitude coordinates for optimal placement and alignment within the 3D world.
Orientation	Change the orientation of the 3D model by adjusting its Heading, Pitch angle, and Roll angle to achieve desired perspective.

Point cloud data is automatically geo-referenced in the 3D world, providing accurate spatial positioning.

Textured Mesh does not contain georeferencing information, so these models are visualized at the default coordinates (0,0,0). To correctly position and orient textured mesh models, you need to adjust their position and orientation settings within the model settings above.