LiDARData.Net Publication

Settings Guide

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Publication Settings Guide

The purpose of this document is to provide the user an in-depth walkthrough of a LiDARData.Net Publication's settings. This document assumes the user has at least a basic understanding of the functionality within an LiDARData.Net publication. Please see the LiDARData.Net User's Guide for more information regarding the functionality within a typical publication.

LiDARData.Net Publication Settings

Located in the bottom left corner of a standard LiDARData.Net publication, the settings dialog is activated by clicking on the solid white gear button (see below). A LiDARData.Net publication has 4 separate settings dialogs: General, Views, Measuring, and Navigation. Each of which will be discussed at length below. There are multiple configurations within a publication but by default, the sidebar containing the settings is located on the left side of a publication. The user can cycle through each of these settings by clicking the appropriate heading in the upper left corner of the settings dialog. Please note that unless otherwise noted the publication's style, position, navigation, units of measure, etc. can each be set to either their default value or customized to meet a specific client's needs.
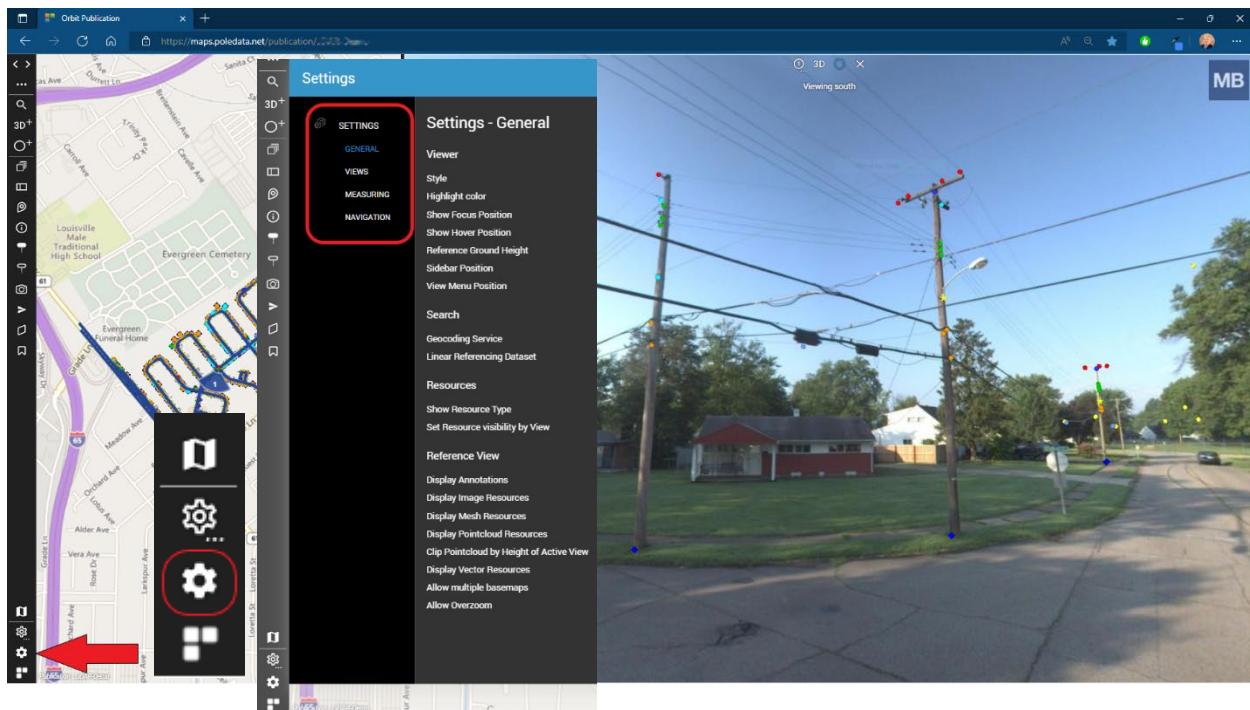
General Settings

The general settings are categorized in 4 distinct groups: Style, Search, Resources, and Reference View.
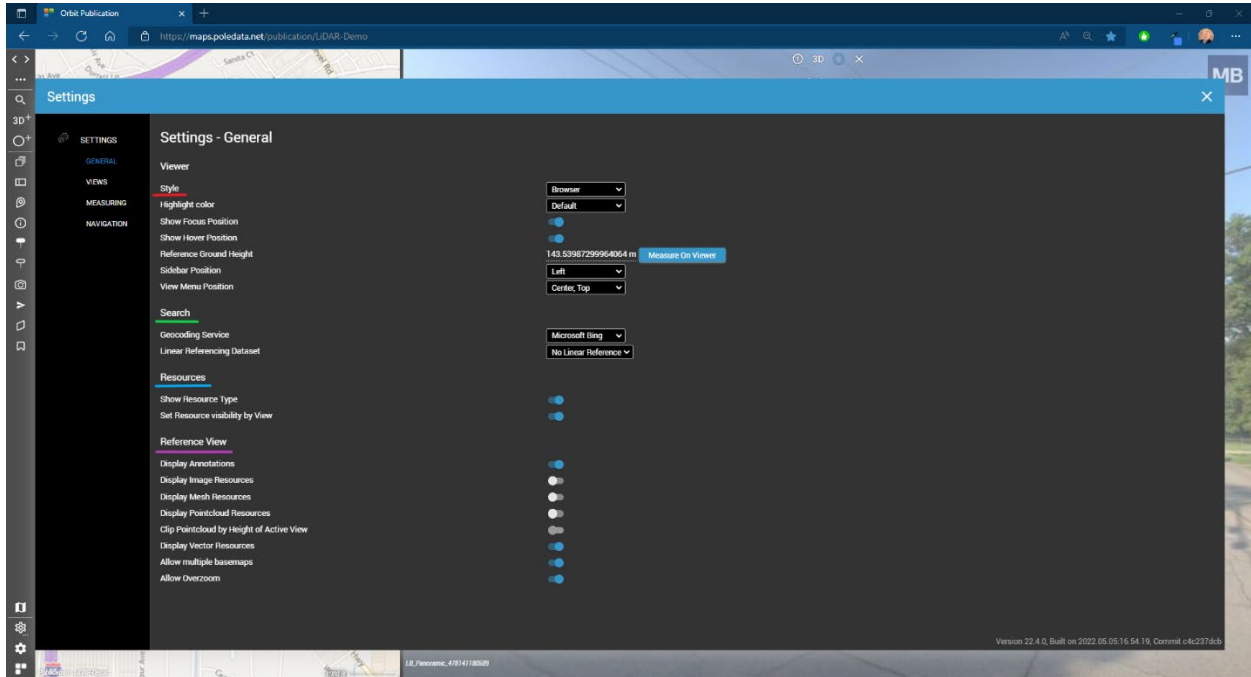

Style

The Style settings control the look and configuration of the overall view. All settings altered during a session are reset to their default values when the publication is refreshed or when a new instance is opened.


1. Style – The style option allows the user to change the basic overall color scheme from Light Mode to Dark Mode. By default, this is set to Browser which uses the web browser settings of the default browser on your computer.


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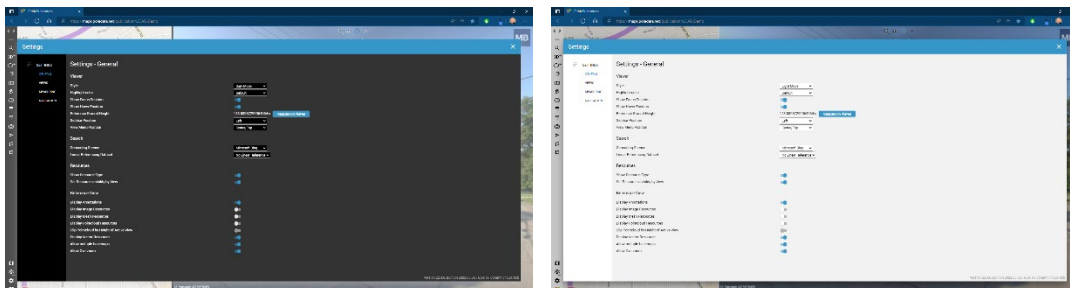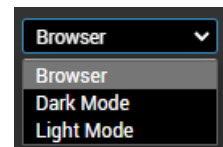
2. Highlight Color – New to version 22.4, the highlight color option controls the color of the various dialogs within the publication. By default, this color is set to Blue, but it can be changed to suit the end-user's needs.
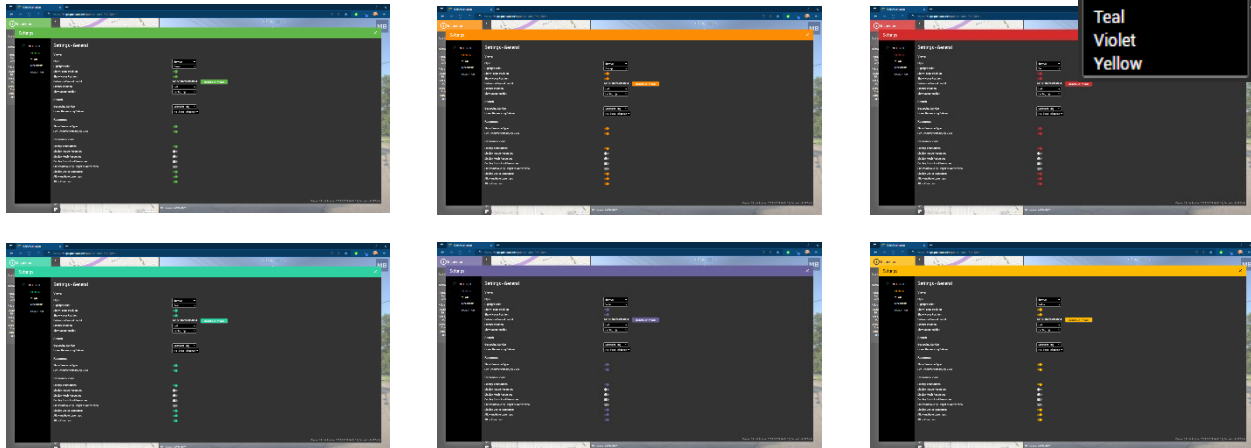
3. Show Focus Position – The Focus Position, symbolized with a green crosshair symbol is displayed in the reference and 3D views and represents the current location and focus of the view. Depending on the type of data being displayed, it can be difficult to see but is found in the center of the active view.

4. Show Hover Position – Similar to the Focus Position, this option will display the current location of your cursor within all views. As shown below, the red crosshair is displaying the relative location of the cursor (hand) on the reference view.
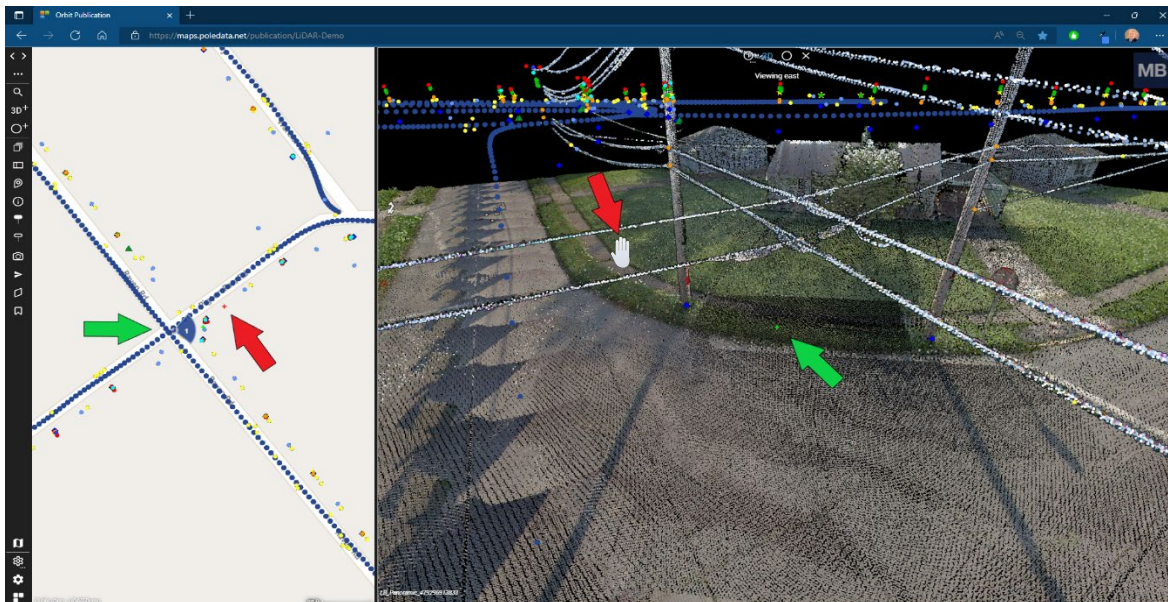
5. Reference Ground Height – This setting will display one of two different iterations of the elevation, meters, within a view. When 3D Data is present in a publication, the value displayed is the derived elevation for the location point clicked in the view minus the height offset of the camera. If selected from an image view, there will not be much deviation within the view. When captured
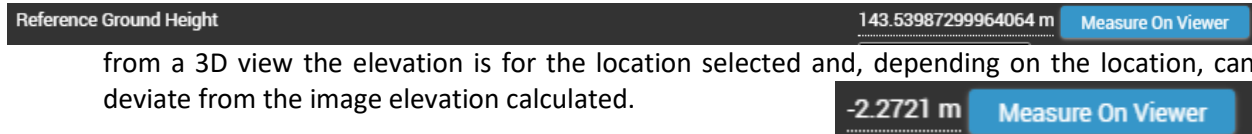

from a 3D view the elevation is for the location selected and, depending on the location, can deviate from the image elevation calculated.


In imagery only publications that do not contain 3D data, the Reference Ground Height defaults to 0m. If measured in a view, the elevation will be calculated as 0 minus the camera height, typically -2.2721 m.

Please note that the Reference Ground Height will only display in meters regardless of the unit of measure settings are configured as.

6. Sidebar Position – As stated earlier in this document, the settings toolbar is typically set to the lower left corner of the default publication. The end user can modify this setting to suit their needs.
   - Left – Default position. This setting places the various tool options in the upper left corner along the left side of the publication. The Settings option is in the lower left corner.
   - Left, Top – Tool button locations are unchanged, but the settings are moved directly under the other tools.
   - Left, Middle – Shifts the location of all buttons to the center of the toolbar leaving blank space above and below the tools
   - Left, Bottom – Tools shift to the bottom left portion of the screen.
   - Right – Mirrors the Left setting on the right side of the screen.

7. View Menu Position – By Default, the view menu is typically situated in the upper middle portion of a view. The Left, Top and Left, Middle options place these items in the upper left corner of the view and in the middle of the view on the left.
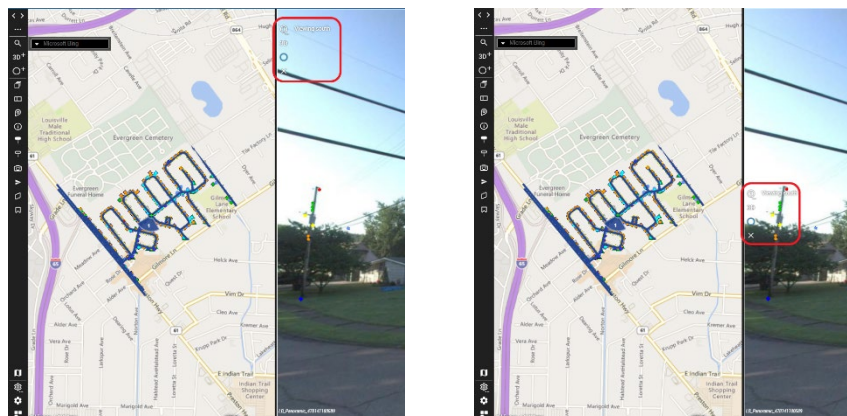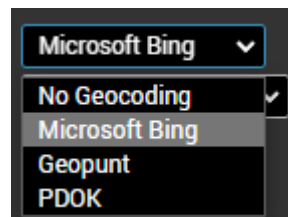
Search
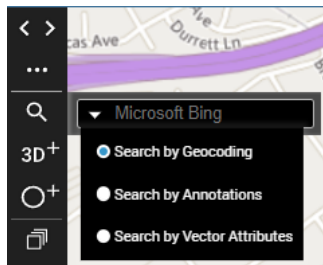
The Search dialog in the upper portion of the toolbar provides users with three different options for performing geocoding or feature search activities.

1. Geocoding Service – The Search by Geocoding dialog, seen in the upper left corner of the publication, has options controlled in the general setting dialog. Microsoft Bing is the default geocoding engine. Other options include Geopunt and PDOK that are only useful geocoding addresses in Belgium, and the option to turn off Geocoding is available.


2. Linear Referencing Dataset – This setting only becomes available if there are datasets containing stationing data. When enabled, this option lets the user search the datasets for specific station info. Currently, Michael Baker International is not utilizing this functionality. By default, all publications are set to No Linear Reference.
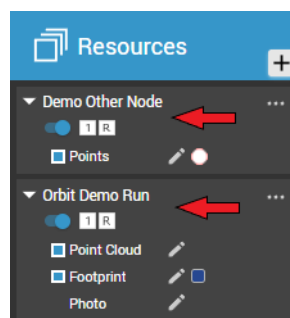
Resources

Resources are datasets that can be viewed in a view and can consist of one of the following: Mobile Mapping (Mobile LiDAR), Oblique (Angled Orthophotography), UAS (Drone), Vector data, Point Cloud, and Textured Mesh. Resources are what the end user utilizes for most geospatial activities.


1. Show Resource Type – When activated, resource types are displayed below the resource name. By Default, this setting is activated.


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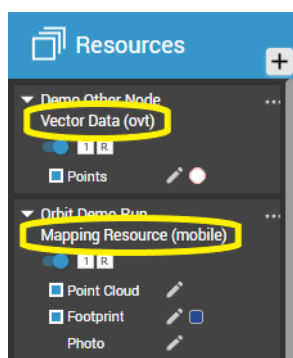
2. Set Resource Availability by View – Allows the end user to activate or deactivate a resource for individual views. When activated the resource displays a small box with a number or R under the resource name. In the example below, you'll notice that there is one spherical view, one 3D view and one reference view active. Clicking the 1 box will deactivate the resource in View 1 only. Clicking 2 would deactivate the resource in View 2 and clicking the R will deactivate the resource in the reference view. These can be set independently of one another. With the setting deactivated, only the ability to simply turn the resource on and off is available. This controls visibility in all views simultaneously.
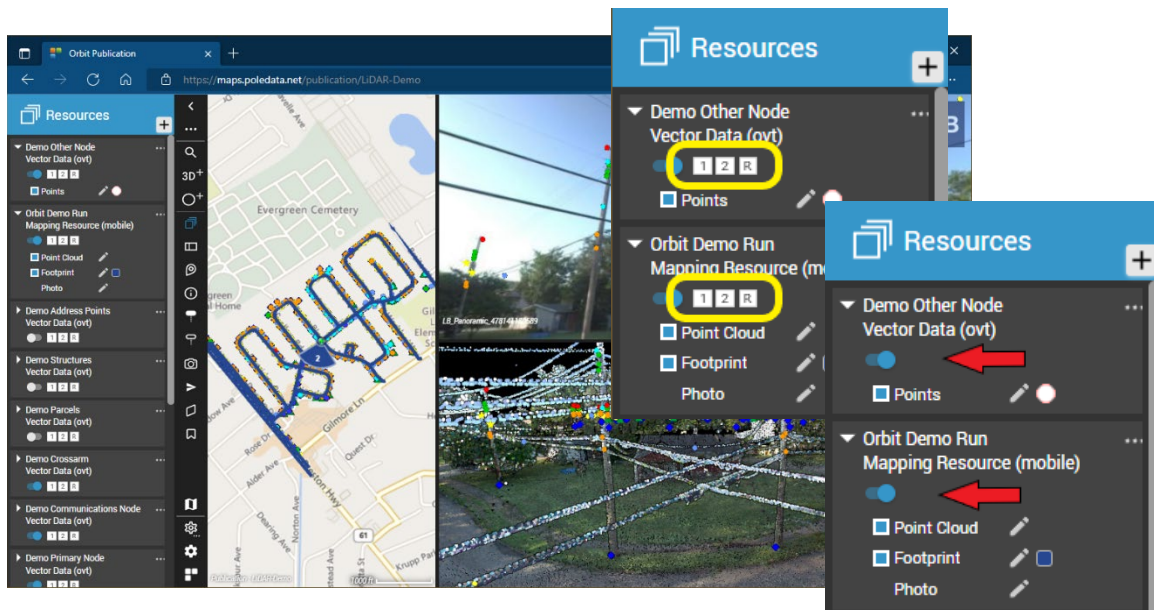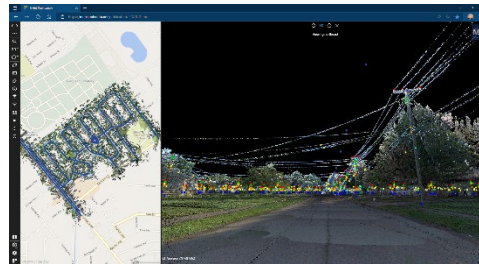

Reference View

Reference view settings control the availability and/or visibility of various resource types within ONLY the reference view.
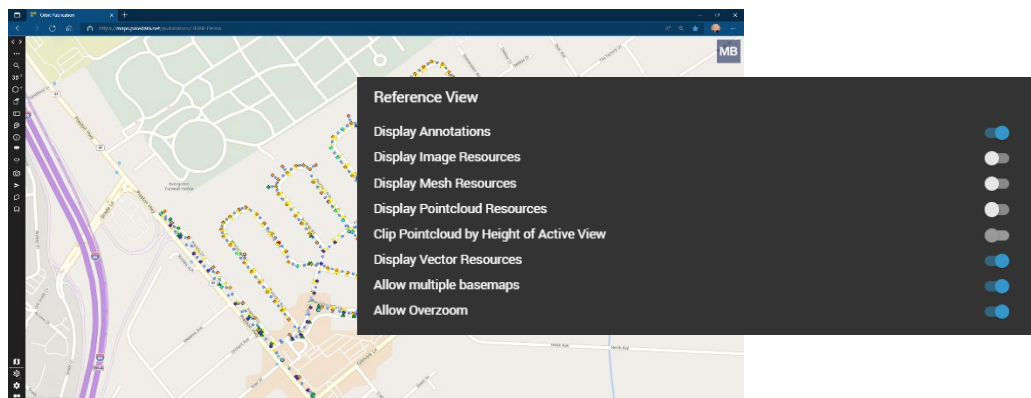

1. Display Annotations – If needed, any annotation items placed within the resource view can be deactivated without removing the annotation itself.

2. Display Image Resources – Ortho images added to the map as a resource can be activated if needed. These resources differ from Basemap resources

3. Display Mesh Resources – When activated, mesh resources can be viewed on the reference map.

4. Display Point Cloud Resources – Allows the 2D display of the full 3D point cloud on the reference view. This resource is only visible as a "top down" visualization.


5. Clip Point Cloud by Height of Active View – The display of the point cloud in the reference view can be changed by altering the view height within the 3D view. Adjusting the view higher or lower will subsequently change the reference view to only display lidar data located at that specific height. As seen in the example below, increasing the height above ground level reduces the density of the point cloud due to fewer features available to reflect a sensor stream.
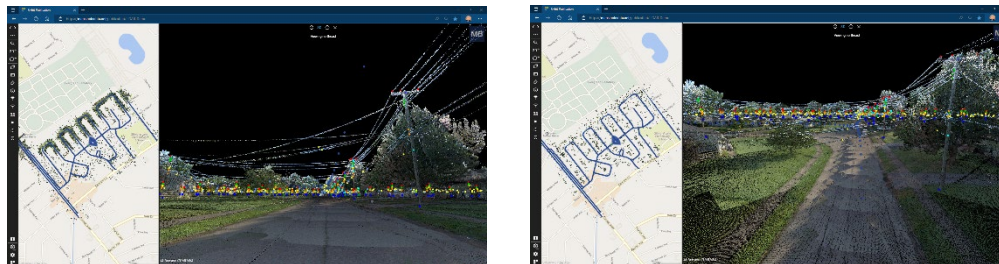
6. Display Vector Resources – This setting overrides the Set Resource Visibility by View option. When deactivated, no vector resources will be displayed on the resource view.

7. Allow Multiple Basemaps – Situated just above the settings button is an icon shaped like a map. This controls the basemap displayed in the resource view. When activated, multiple basemaps can be view simultaneously. Display order is determined by list order in the dialog. All publications have the Bing Maps Aerial, Bing Maps - Aerial & Labels, and Bing Maps – Road as options. Additional basemaps can be added on a project-by-project basis.
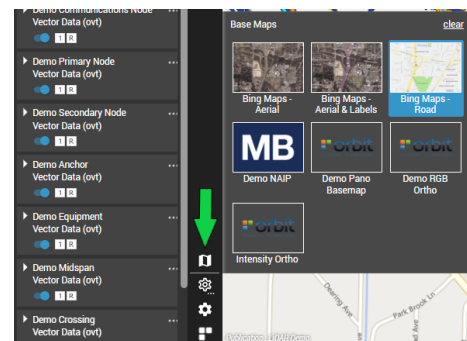
8. Allow Overzoom – Deactivating this setting will restrict the ability to zoom in to very large-scale views.

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View Settings

View settings control how and where data is displayed within the publication. As with many of the General settings, most of the view settings are used to customize the user experience and can alter the look and feel of a publication a great deal.
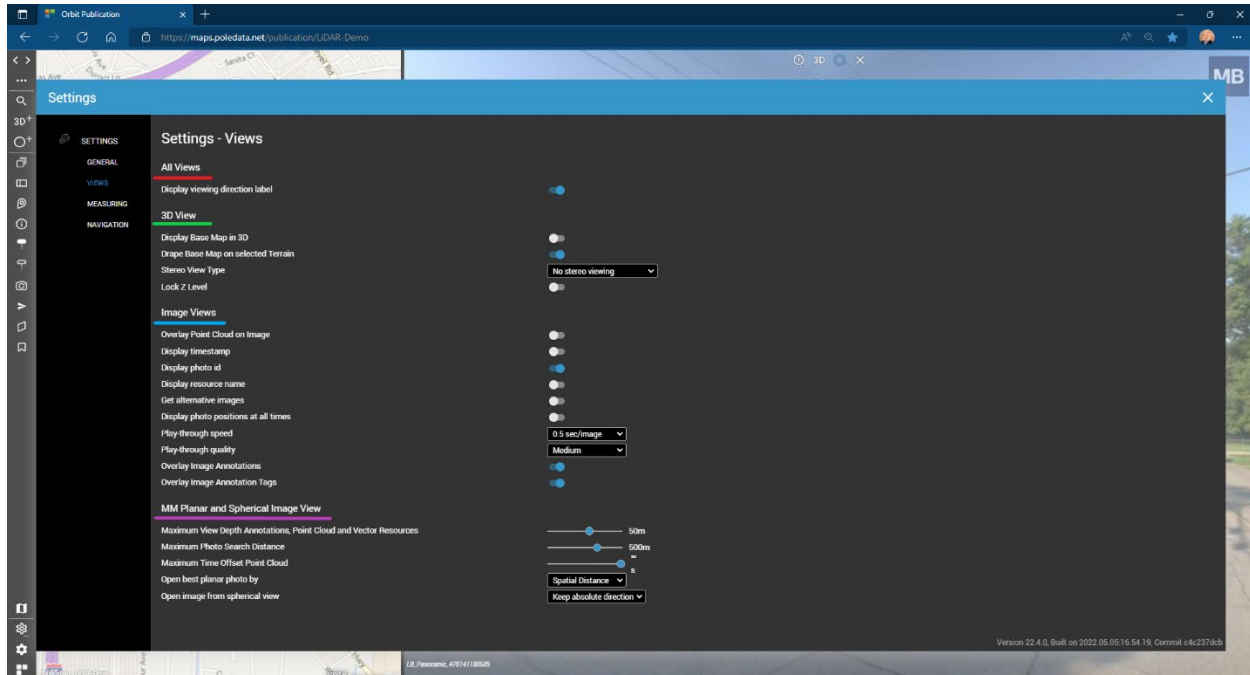
All Views

1. Display Viewing Direction Label – Activated by default, the setting controls the display of directionality for all views. The text displayed indicates the direction that the viewer is facing. This text is dynamic and will change as the view rotates.
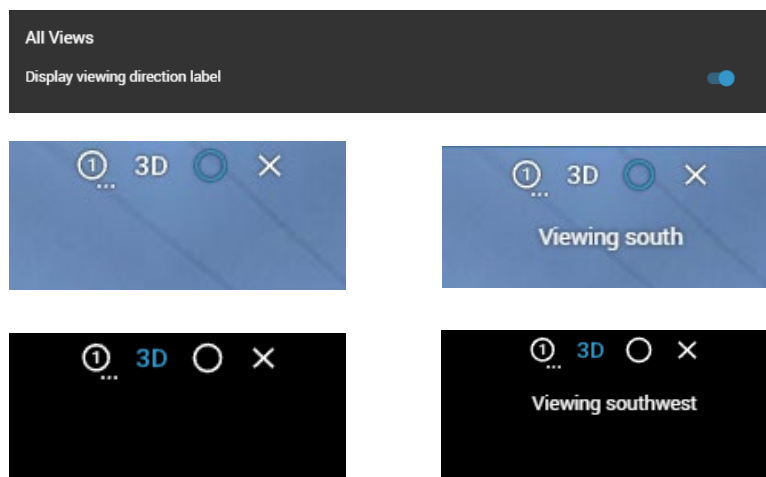
3D View

1. Display Base Map in 3D – This setting controls the visibility of base maps within a 3D view. The publication will place the basemap at the elevation set with the Reference Ground Height. When deactivated the background will be set to the default value set in the Workspace toolbar. By default, the Workspace background is set to Black/White. This setting will display one of the two colors based upon the browser setting. Please see the LiDARData.Net User's Guide for further information on the Workspace toolbar.
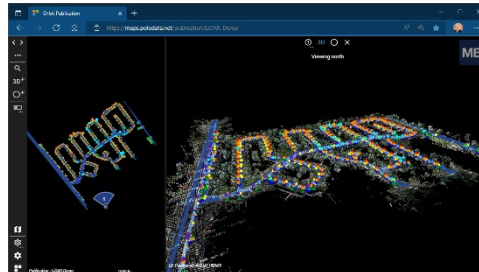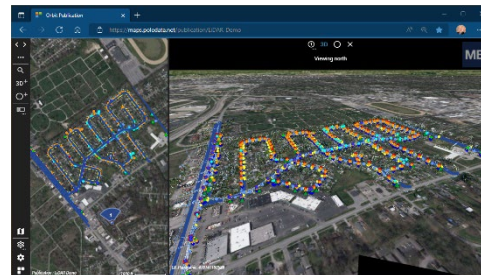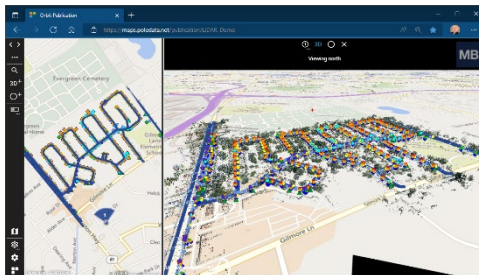
2. Drape Base Map on Selected Terrain – When a 3D terrain model is loaded into a publication, this setting allows the basemap to be draped directly onto the model. Deactivated by default.

3. Stereo View Type – Six different stereo viewing options are available to the end user. By default, not stereo viewing is selected.

4. Lock Z Level – When activated, the elevation of the 3D view becomes stationary. Panning, zooming, and rotating are still available as navigation tools.
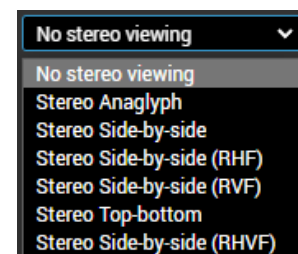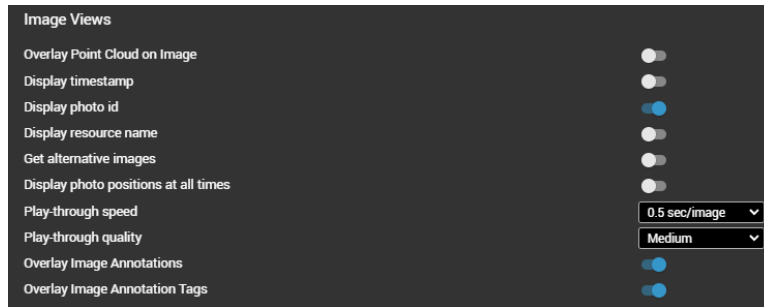
Image Views

1. Overlay Point Cloud on Image – When activated, point cloud data is displayed in the correct spatial location on the image view. Shown below, the example shows the point cloud data, symbolized by height, is overlaying the coincident imagery.

   Please note that due to the differences in collection hardware between imagery and LiDAR data, the two sources of data may not line up perfectly. Spherical imagery in inherently more inaccurate than point cloud data, but not to such a degree as it becomes unreliable. In situations where vector data has been extracted, it is done in a 3D environment to provide the most accurate data possible. This will explain minor variations between vector data any imagery where they do occur.
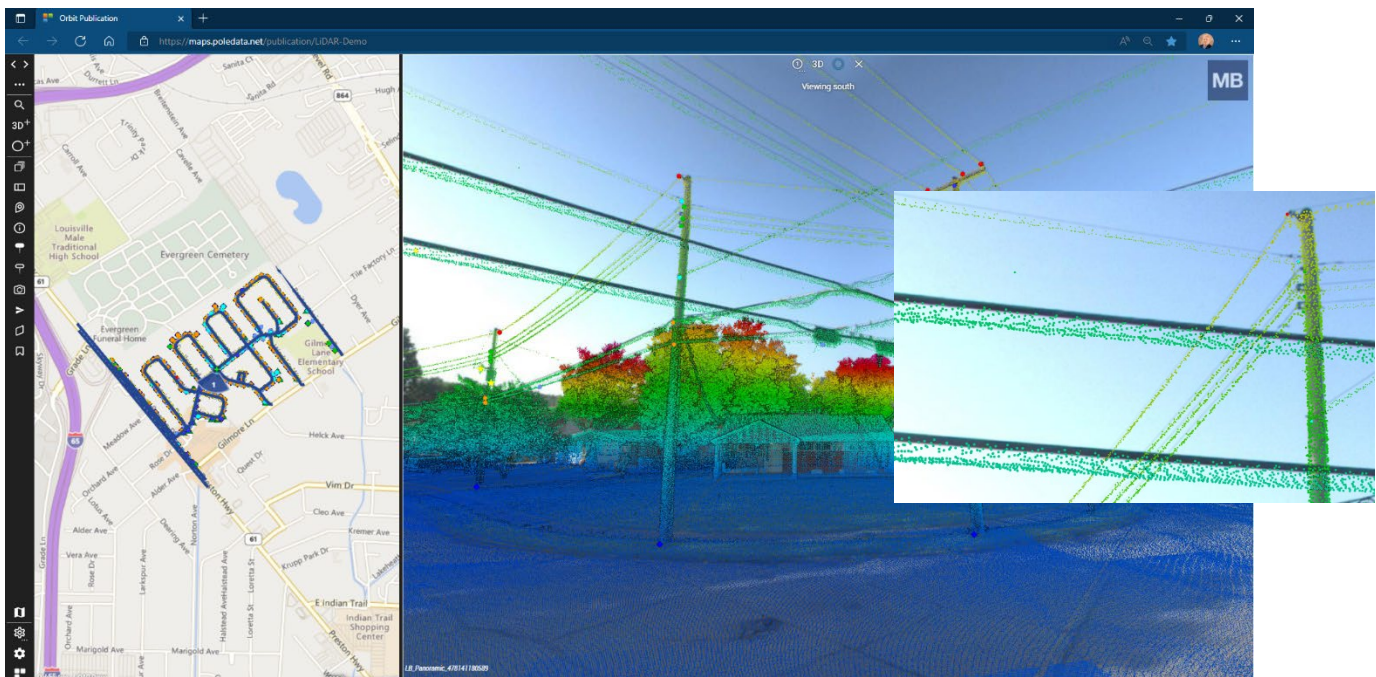
2. Display Timestamp – If the LiDAR collection and processing environment embeds timestamps onto the imagery, they will show up in the lower left corner of the spherical view as white text. In situations where the information is not collected, "d2" will be displayed in that location. In most cases, this information is not collected and this setting is deactivated.


3. Display Photo ID – All underlying spherical imagery has a unique name for each of the individual images. The name is displayed to the right of the timestamp and resource name in the lower left corner of the view. The image naming convention can change on a project-by-project basis, but in most cases the name has a "LB_Panoramic_" prefix. This setting is typically activated by default.
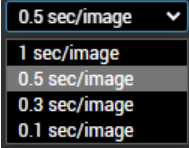
4. Display Resource Name – Displayed between the timestamp and photo id, the resource name will display the resource it is associated with in the resources toolbar. If multiple mobile mapping resources are utilized in a single publication, this setting will be activated.
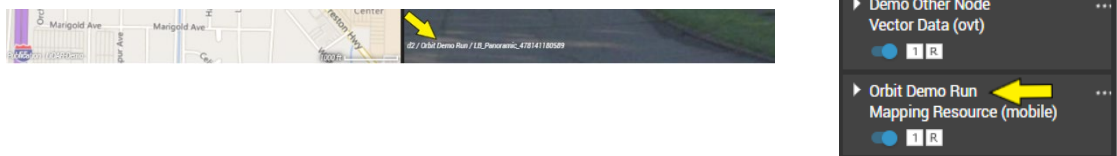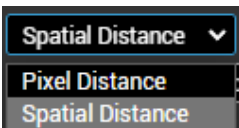
5. Get Alternative Images – When activated, a dialog along the bottom of the view is displayed with a series of consecutive images. Clicking on an image will shift the focus of the overall view to the selected image. Placing the cursor on the first or last image will display an arrow used to move the image list forwards or backwards. In the upper left corner of the dialog is an X that closes the dialog and a left arrow in the bottom left that collapses the dialog.

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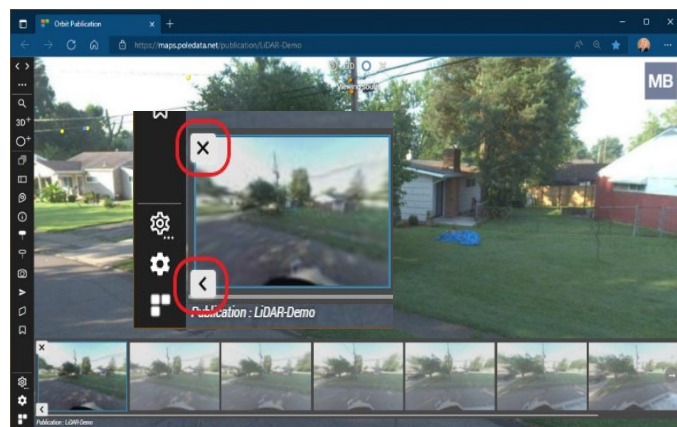
6. Display Photo Positions at All Times – When NOT activated, the photo positions, represented by a shaded circle, will disappear until the cursor is moved within a short distance of a photo point. Typically activated by default, this setting will persistently show the photo point, regardless of the position of the cursor or image direction.

7. Play-Through Speed – When utilizing the Play function, this setting controls the speed by which each of the images automatically cycles. By default, this setting is set at 0.5 sec/image. The image path is controlled by the original collection path of the vehicle and cannot be changed.

8. Play-Through Quality – During the play-through process, the spherical imagery will display a lower resolution that would normally be see for performance purposes. Increasing or decreasing the image quality can affect performance. Medium is the default setting.

9. Overlay Image Annotations & Overlap Image Annotation Tags -   Both options, activated by default, control the visibility of annotation features within all open image views.

MM Planar and Spherical Image View
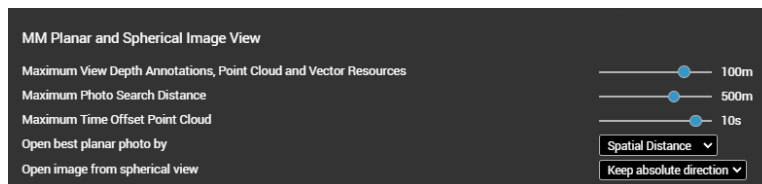
1. Max View Depth Anno, Point Cloud, and Vector Resources – This distance setting adjusts the view depth of each item from the current photo position. This can be used to limit distant features in the background that can clutter the view. In most cases, this option is set to 100m.

2. Maximum Photo Search Distance – Much like the previous option, this setting controls how far an image can be from the current photo position and still open. The default value is set to 500m.

3. Maximum Time Offset Point Cloud – Another option available to limit the amount of data available within an image view, this setting controls the maximum time that point cloud data can be rendered, as determined by the time stamp of the photo. This setting has no bearing on 3D views, only spherical imagery. Settings range from 1 second to 10 seconds plus infinity. When set to infinity, all point cloud data will always be rendered. This can have a negative effect on performance. The default is typically set to 10s.

4. Open Best Planar Photo By – Planar images will open the best photo for any position based upon either of these settings. By default, it is set to Spatial Distance.

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5. Open Image from Spherical View – When opening a new spherical image, the direction the image view faces is determined by this setting. The default, absolute direction opens any new image so that the camera is pointing the same compass heading. Using the relative direction option, new images will open facing the same direction relative to the vehicle as the last image. For instance, if the current image view is pointed to the left of the vehicular direction of travel, the new image will open facing the left regardless of the vehicle's orientation.
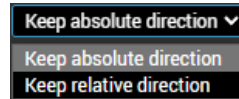
Measurement Settings

Measurement settings control the measurement techniques, display projection, and map units of measure. This dialog will contain different settings depending on the source of the mobile mapping resource. Publications with 3D point cloud data have an extra group of settings focused solely the behavior of the cursor and point cloud display. Each variation will be discussed in this section.

Spherical Imagery Only
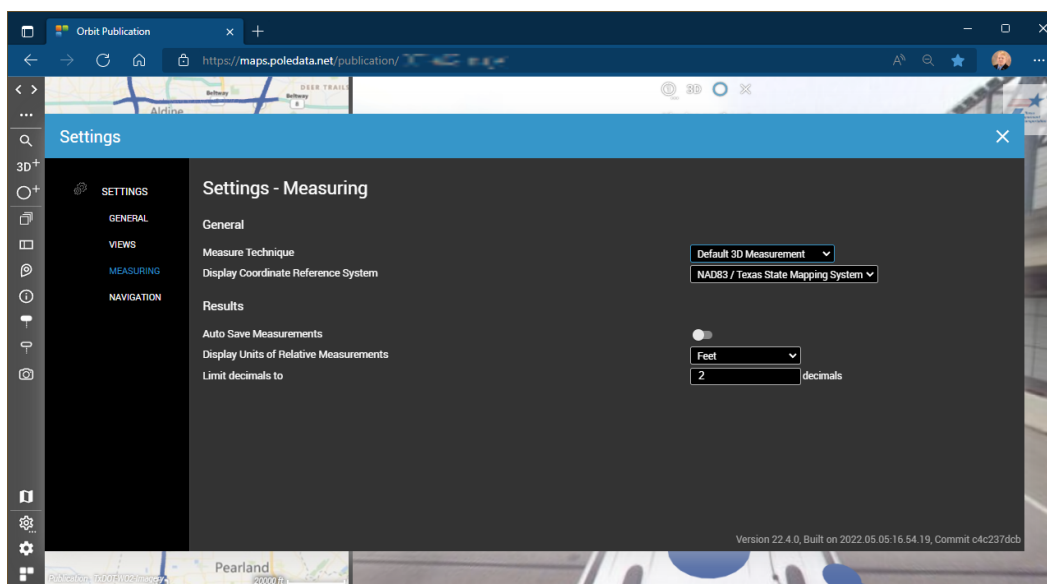
Spherical imagery publications contain two categories of measurement settings, General and Results.

General

1. Measure Technique – Three measurement techniques are available for spherical only publications.

   - Default 3D Measurement – Combines all supported single click measurement options and returns the first working technique. This is the default measurement option.
   - Forward Intersection – Measurements are captured as the result of two measurements. Two image views are opened, and the same measurement is made in each view to determine the value. Essentially this setting is image triangulation.
   - Ground Surface Intersection – A single-click measurement that calculates the values based upon the intersection of the horizontal ground surface plane.

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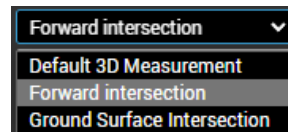
2. Display Coordinate Reference System – The user can select the appropriate coordinate reference system based upon the unique coordinate references of all loaded resources, the publication coordinate reference setting (as established by the administrator), or WGS84 which is available for all publications. Resources with multiple coordinate systems are supported but the coordinate system of the mobile mapping resource(s) are the preferred option.
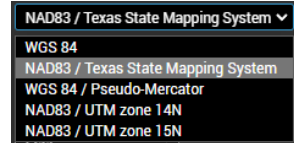
Results

1. Auto Save Measurements – When activated, measurements taken in a view automatically have an entry created in the save edits dialog. The user is provided with fields in which they can enter a Code value and Comments. These records can then be copied, saved, exported, or deleted as desired. If not exported, the values in the table will be automatically removed when the publication is refreshed. Please see the LiDARData.net User's Guide for more information about saving measurements. By default, this functionality is deactivated.

2. Display Units of Relative Measurements – Set to Feet as the default, this setting allows the user to change the units of measure displayed within a view.

3. List Decimals to – Controls the number of decimals displayed in a measurement value. Typically set to 2 as the default.
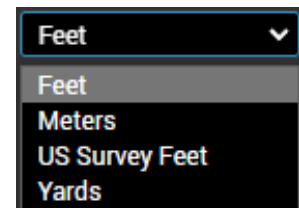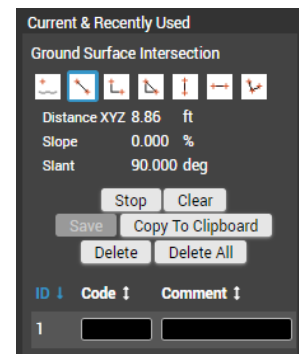
3D Views Only

3D view measurement settings contain an additional category of options, Hover, along with additional options for the measurement techniques setting. The coordinate reference system settings and results category are the same as a spherical only publication.
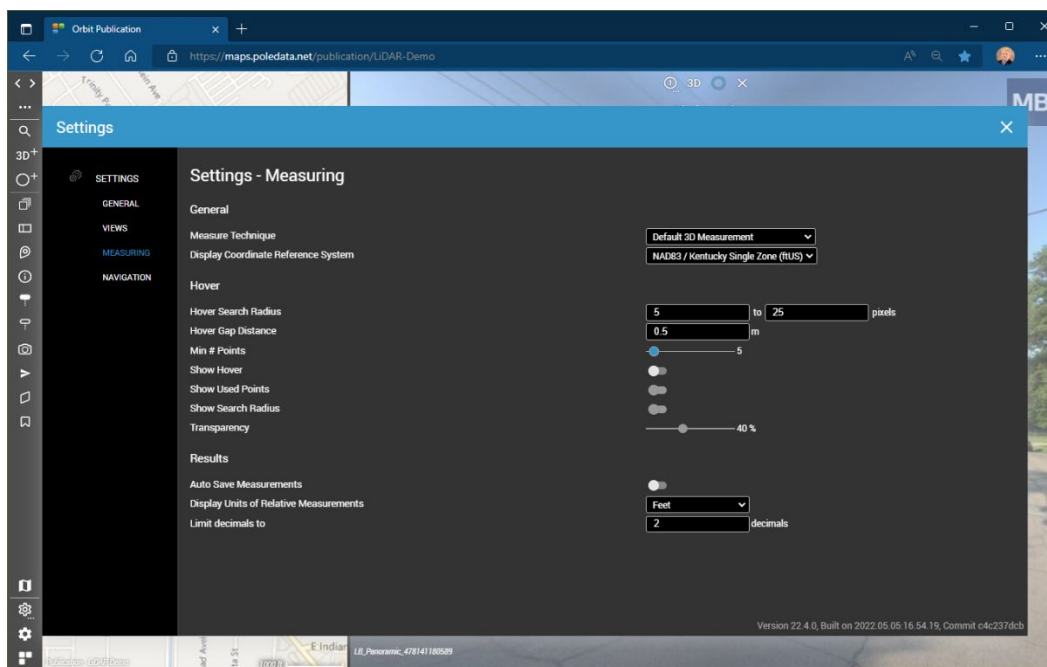
General

1. Measure Technique – Like spherical only publications, 3D views contain an array of measurement options available to the user.

   • Default 3D Measurement - Combines all supported single click measurement options and returns the first working technique. This is the default measurement option.
   • Point Cloud Closest Point – Automatically selects the nearest point available in the point cloud.
   • Point Cloud Flat Surface Intersection – Interpolates the measured point within a range. Distance settings can be controlled in the Hover section of these settings.
   • Point Cloud Ridges and Corners –
   • Forward Intersection – Measurements are captured as the result of two measurements. Two image views are opened, and the same measurement is made in each view to determine the value. Essentially this setting is image triangulation.
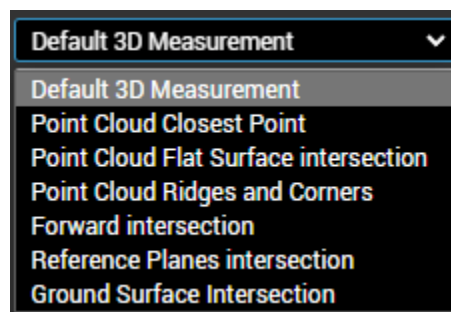
- Reference Planes Intersection – Identifies the edges, ridges, and corners within the point cloud.
- Ground Surface Intersection – A single-click measurement that calculates the values based upon the intersection of the horizontal ground surface plane.

2. Display Coordinate Reference System – See description in Spherical view section of this document.

Hover
This category of settings is only available for publications that contain 3D mobile mapping data.

Hover		
Hover Search Radius	5 to 25	pixels
Hover Gap Distance	0.5	m
Min # Points	●——— 5	
Show Hover	◖	
Show Used Points	◖	
Show Search Radius	◖	
Transparency	———●——— 40 %	

1. Hover Search Radius – The minimum and maximum radius searched around the cursor. Set to 5 to 25 pixels by default.
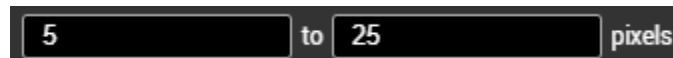
2. Hover Gap Distance – The minimum distance required between two points before they are not considered to be part of the same clutter of points. The unit of measure for this setting will remain in meters regardless the settings chosen under Results.

3. Min # Points – The minimum number of points needed for the hover tool to recognize the data.

4. Show Hover – Activates and displays the hover radius, symbolized as a yellow circle. Deactivated by default.

5. Show Used Points – Displays the points utilized within the current hover location. Note that in the example to the right, this has been adjusted to the highest possible setting (100 pts). Only available when Show Hover is activated. Deactivated by default.

6. Show Search Radius – The actual search boundary within the hover symbol. While a bit difficult to see, this setting will display the radius as R # and the used point setting as P #. Only available when Show Hover is activated. Deactivated by default.

7. Transparency – Control the transparency of the hover itself. Set to 40% by default.

Results

1. Auto Save Measurements – See description in Spherical view section of this document.

2. Display Units of Relative Measurements - See description in Spherical view section of this document.

3. Limit Decimals to – See description in Spherical view section of this document.

Navigation Settings

Navigation settings are identical between spherical views and 3d views.
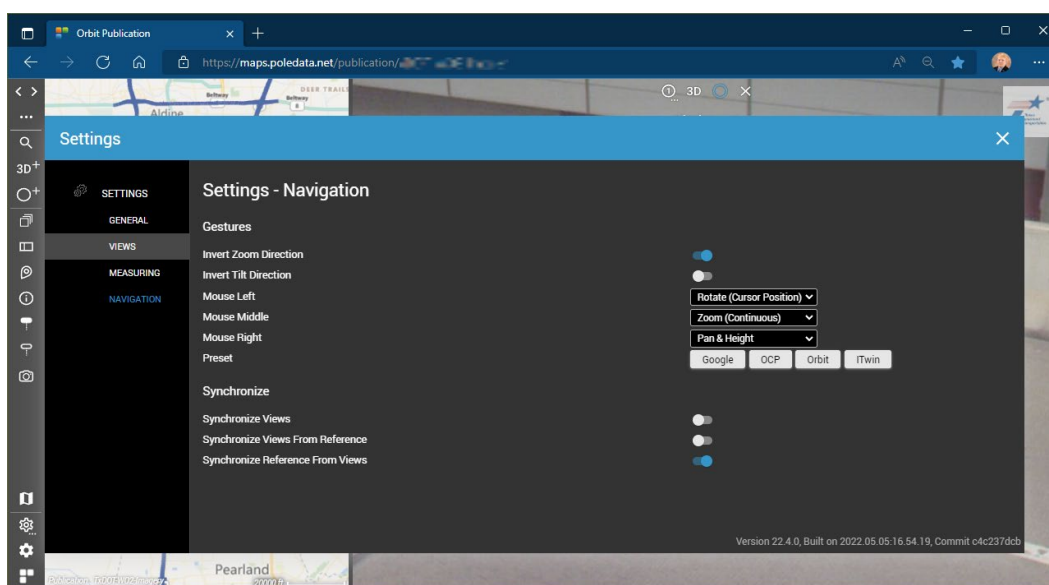
Gestures

1. Invert Zoom Direction – This setting controls the direction the view zooms when using the scroll button on your mouse. Activated by default, the zoom direction is IN when scrolling the wheel forward and OUT when scrolling the week backwards.

2. Invert Tilt Direction – Deactivated by default, this controls the direction the view tilts when utilizing a left mouse click and hold action. Pushing the mouse forward will tilt the camera downward; pulling the mouse backwards tilts the camera upward. Left and right rotating is unchanged.

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The next three settings allow the user to customize the default mouse actions for both mouse buttons and the scroll wheel. By default, Mouse Left is set to Rotate (Cursor Position), Mouse Middle (scroll wheel) is set to Zoom (Continuous), and Mouse Right is set to Pan & Height.

3. Preset – The options specified in the preset present four options of pre-configured Gesture settings. Users can investigate each option to determine if one fits their needs the best.
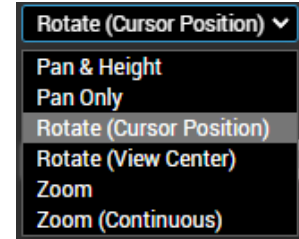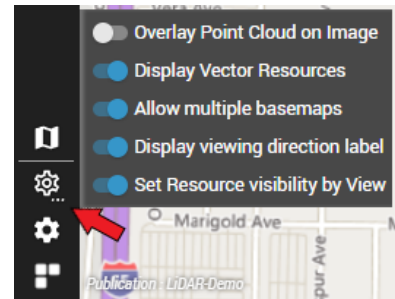
Synchronize

The final settings category control how the views interact with either the reference view, spherical or 3D views, or both simultaneously. Synchronization allows the user to pan, rotate, or move one view while simultaneously performing the same action in other reference, spherical, and/or 3D views. By default, each of these settings are activated.

1. Synchronize Views – Activated, this setting synchronizes all views simultaneously to the view that is being manually adjusted. If a user proceeds to a different coordinate within the view, the reference view will shift to match the new location. Pan/Tilt/Rotate actions are mirrored in all other open spherical or 3D views. When activated, this takes precedence over the remaining two settings.

2. Synchronize Views From Reference – Moving the location of a view in the reference view will also shift any spherical or 3D views to the same location. If this setting is the only one activated, Pan/Tilt/Rotate actions are NOT mirrored in any other open spherical or 3D views.

3. Synchronize Reference From Views – Shifting the location within a spherical or 3D view will cause the reference view to shift to the same location. If this setting is the only one activated, Pan/Tilt/Rotate actions are NOT mirrored in any other open spherical or 3D views.

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Quick Settings Dialog

Just above the settings button on the toolbar, another gear icon is shown but is hollow in color and contains an ellipsis (…) to the bottom right of this icon. Hovering the cursor over the icon will temporarily display the list. Clicking the icon will dock the list in the view. Clicking again will make the list disappear. When active, a series of 5 possible map settings can be displayed with a simple activate/de-activate button that controls the individual settings. This list is customizable and can include virtually all activate/deactivate settings discussed in this document. This list is customized on a project-by-project basis, depending on the content of the publication and the needs of the client. These settings can only be modified by the LiDARData.Net administrator and can be added/removed/modified as needed throughout a project.

Examples of commonly used settings include:

Reference View

- Display Annotations
- Display Vector Resources

Viewer

- Show Focus Position
- Show Hover Position

Navigation

- Synchronize Reference From Views
- Synchronize Views
- Synchronize Views From Reference

Action

- Focus

3D View

- Display Base Map in 3D
- Lock Z Level

All Views

- Display Viewing Direction Label

Image View

- Overlay Point Cloud on Image