- when it has to be **right**

Leica
Geosystems

Leica Geosystems
TruView Global User Guide

Table of Contents

Basic Concepts

Leica TruView Global is very simple to use. After you understand the basic concepts you will find it is easy to view, markup and measure point cloud data.

1 System Requirements
1.1 Client

Supported Devices: Desktops, Laptops, Tablets, Smart Phones.

Supported Browsers: Chrome 44, Firefox 39, IE 11, Safari 8, iOS Safari 8.3, Android Browser 40, and Chrome for Android 42, or newer.

Browsers must be a version sufficient to support **WebGL and HTML5**.

1.2 Server

TruView Global is distributed as a Virtual Machine Appliance with 2 CPUs and 2GB of memory.

The VM engines supported are:

- VMware Workstation 10 and 11
- VMware vSphere 5.0 and 6.0
- Microsoft Hyper-V on Windows Server 2012 and x64 Pro and Enterprise editions of Windows 8 and 8.1
- Oracle VirtualBox 5.0 for demonstration purposes or limited use only

Check the "TruView Global Compatibility Matrix for Servers and Clients" pdf to get detailed information on supported devices and platforms. It can be found at the following link:

https://scanswfs.leica-geosystems.com/dl/Y506FW8sRM

2 TruView Global Users

TruView Global supports three classes of users: Administrators, Login Users and Anonymous Users. Each class of user has specific capabilities enabled or not, depending on the class.

- **Administrator:** Has all capabilities enabled
  - Can upload, manage and delete TruView project sites
  - Can create, manage, delete all user accounts
  - Can adjust all site settings
- **Login User:** Has a user name and password provided by an Administrator
  - Can see all uploaded TruView sites
  - Has full markup capabilities enabled
- **Anonymous User:** Has no user name or password
  - Can only visit "Public"   sites (Public sites described elsewhere in this document)

o   Does not have markup capabilities enabled

3   Administration Capabilities

During the installation process an Administrator login account name/password is created. This is the initial Administrator login account. This Administrator (any Administrator) can setup any number of user accounts and they can grant administrator privileges to any number of user accounts. So there can be one or more Administrators.

3.1   Administration Login

Administrators and all Login Users login via the same TruView Global login. All logins take users to the "All Sites"   starting page but users with Administrator privileges enabled will see a few additional menu items and have a few extra capabilities enabled. These features are described elsewhere in this document. Login and Anonymous users will not see these extra items.

- Manage Users Menu
- Import Site Tools
- Manage Sites Capabilities

3.2   Uploading Sites

Administrators can upload new sites to the TruView Global Project Vault. Once uploaded, these sites will become available for users to see and visit. The process requires a few easy steps.

- You must first "Pack"   the TruView data set using the TruView Pack and Go tool. This tool is installed with Cyclone. Use the tool and select "Prepare for TruView Global" and follow the instructions. The packer will create a *.TVG file.
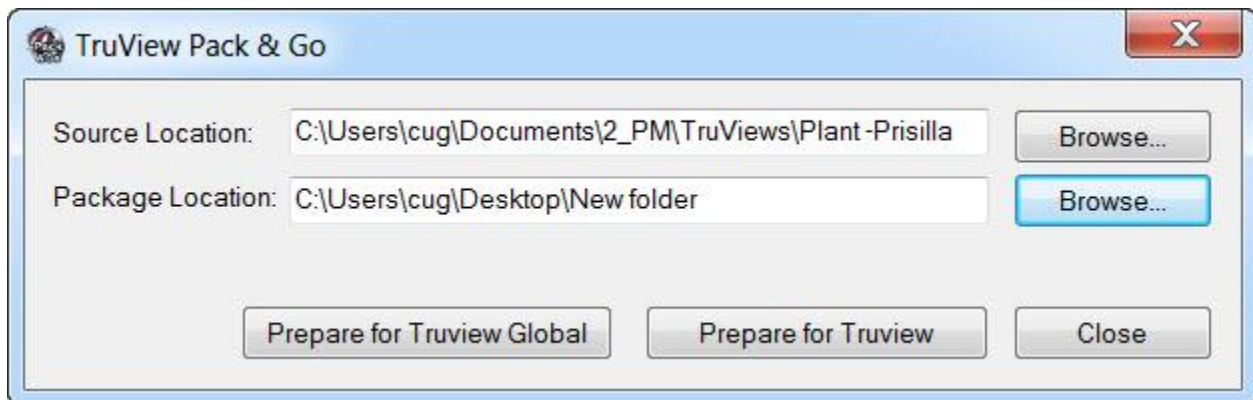
- Select the "Add Sites"   button from the TruView Global Sites page and the "Upload New
- Data Sets"   page will open.

- Simply drag and drop the *.TVG file you created with the Pack and Go tool and it should begin to upload immediately.
- The system will provide feedback regarding the progress of the upload.
- Once the upload stage has completed you will receive feedback that it is done. However, the process itself still has more steps beyond uploading. Once the data is uploaded, it then needs to be imported to the system databases.
- Administrators can also monitor the progress of the importing process by using the "Import Queue"   button and they will see the following page which provides again real-time feedback of the progress. Once this importing process is completed, the site is immediately available to users.
- One final monitoring capability is accessed via the Import Log button. This button opens a page which has logged all of the recent uploading and importing activities. If there are any problems with your uploads and imports, you can find descriptions of the errors here. This can help you and Leica Technical Support diagnose any problems.

Once you have successfully uploaded a new Site:

- It will be added to the organizing Group named "No Group"
- It will have the name of the root folder where it was packed

3.3   Managing Sites

After uploading sites, the Administrator can manage the sites in various ways.

- Organize sites by Group
- Make a site Public
- Edit the site name and tool tip
- Delete a site

While logged in as an Administrator there is a special function enabled. If you select with the mouse cursor in the white space of a site listing, it activates the editing controls. You can use these edit controls to manage the sites attributes. See image below.

3.4   Organizing Sites by Group

After selecting a site in the table you can enter a Group name to move the site into an existing or new Group. After entering the Group name use the "Move to" button finish the action. See image below.

3.5 About Public Sites and Anonymous Users

Public Sites are sites that have been "made public" such that they will allow users to visit with no login. These special no login visitors are called "Anonymous" users. These users are restricted in several ways.

- The "All Sites" page is not accessible without a login, so Anonymous users cannot see the total list of projects.
    - o Therefore, if a site is to be set as a Public site, you will need to send the url of that specific site to anyone you wish to be able to visit it anonymously.
    - o You could of course add a link to a Public site from any other webpage, etc.
    - o To get the url of a Public site simply visit the site after making it Public (as described below) and copy the url from the browser address bar.
- Anonymous users are "Read Only" users so they will not have access to the Markup tools.

Public sites are also accessible by Login Users and Administrator Users. They remain listed in the All Sites listing in their respective Groups.

3.6 Publish or Un-Publish a Public Site

To set a Site as a Public Site, activate the Site editing tools and select the Public/Private icon. To make a site Private, which is currently Public, activate the Site editing tools and you will see the icon has changed to show the site is Public. Simply select the icon and it will make the site Private.

After making a site Private, the links to that site will no longer be active and no-one can access the site via those previously available links.

When you make a Site to be public, you are asked to confirm your action and given the opportunity to change the description text as shown in this dialog box.

When a site has been made as a Public Site, the Site Icon next to the name changes to indicate the Public status.
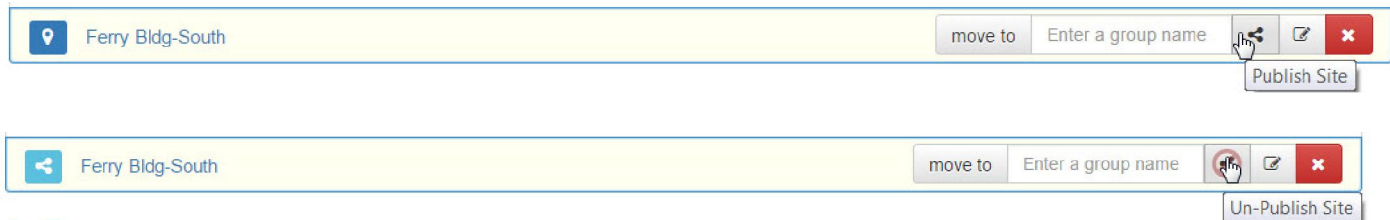
3.7 Setting a Site Name and Description

To edit the name and description of a Site, select the Edit Site icon after enabling the editing tools for the Site.

After selecting the edit site icon you will see the following dialog box where you can change the Site name and the description.


3.8 Managing Users

Administrators can also setup user login accounts. There are several aspects to this capability.

- Administrators can create new Login User accounts by entering a login name and passwords
- Administrators can set a user account active or in-active
- Administrators can receive requests for new login accounts

- Administrators can enable accounts with Administrator privileges
- Administrators can receive request to reset passwords

3.9 Enter User Management Page

To begin any user management activity, Administrators need to enter the Users page by selecting the Manage Users menu item in the top menu bar.
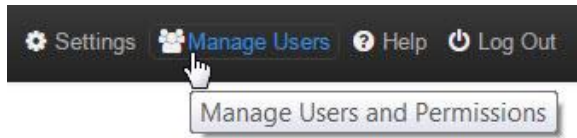
3.10 Adding a New User

To add a new user, select the "Add New User" button on the Users page.

You will then see the add new user dialog box where you can enter all user data

- Users First and Last name for your internal reference
- Username the user will use for login
- The users email address
  - This email address must be unique. Any given email address may only be used once.
- Administrator privileges checkbox
  - Checking this box will provide admin privileges to this user
- Enabled check box
  - Checking this box makes this an active user. You can leave it unchecked or uncheck it at any time to activate or deactivate any given user
  - If this box is not checked, the user is deactivated. Deactivated users are not shown on the Active Users page but will be displayed on the Inactive user page.
- Enter a password for the user and enter it again in the confirmation field
- Use the Save changes button to save the current information

Important: Version 1.0 of TruView Global does not automatically inform the user about their account activation. The ADMINISTRATOR MUST send the notification and password to the new user. The user's email is listed at the top of the dialog as a "mailto" link so the administrator can click on the link to start an email session if they

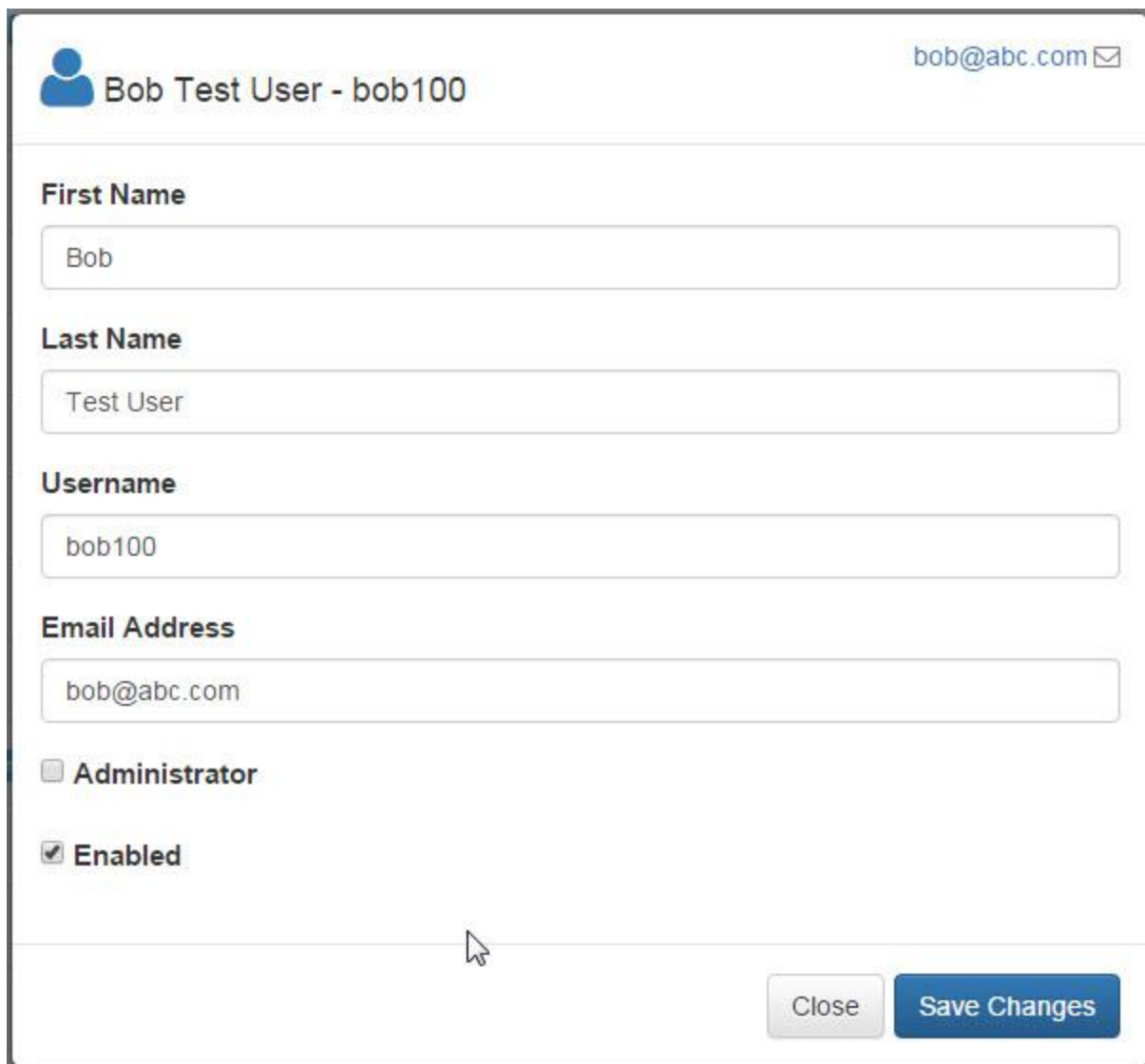have an email account setup on that computer.

3.11 Enable/Disable Users

To disable an active user, select their name from the Active users list and deselect the "Enabled" checkbox. The user account will be deactivated and the user name listing moved to the Inactive users list. To enable a disabled user account, select their name from the Inactive users list and check the Enabled check box.

3.12 Delete Users

To delete a user, select the delete icon in the Active or Inactive Users list.

3.13 Changing a User Password and Password Reset Requests

To change a user's password select the Change Password icon in the Active or Inactive Users lists. You can do this at any time. You will be presented with the Change Password dialog box. Enter the new password and then enter it again in the confirmation field, then hit the Change Password button to complete the task. There is also a Password Reset Request option for users who have forgotten or otherwise wish to have their password changed. This option is accessed from the login page. After the user enters their request, it will show up on the Password Resets page of the Manage Users area. There will also be a small red icon showing the number of resets currently requested. To Reset the password for the user simply select their name from the list of Reset requests and you will be presented with the Change Password dialog box.

Important: Version 1.0 of TruView Global does not automatically inform the user about their account activation. The ADMINISTRATOR MUST send the notification and password to the new user.The user's email is listed at the top of the dialog as a "mailto" link so the administrator can click on the link to start an email session if they have an email account setup on that computer.

3.14 About "Requested" Accounts

At the site login page there is an option for users to request an account. They will fill out a request form and the request will be added to the Open Requests tab.

- The Open Request tab is only visible if there are pending requests
- The Open Requests tab will show the number of pending requests in a small red icon
- These requests will remain open until they are approved

To approve an open request, select the request from the list of open requests on the Open Requests tab. It will open a typical New Account dialog box with all user supplied fields filled in.

- Decide if the account should be enabled and set the Enabled check box appropriately
- Decide if the user should have administrator privileges and set the check box appropriately
- Provide a password for the users and enter it twice in the two password fields
- Select the Save Changes button when you have completed all the data entry.

The user account will be added to the Active or Inactive user lists (as appropriate) and will be removed from the open requests.

Important: Version 1.0 of TruView Global does not automatically inform the user about their account activation. The ADMINISTRATOR MUST send the notification and password to the new user.The user's email is listed at the top of the dialog as a "mailto" link so the administrator can click on the link to start an email session if they have an email account setup on that computer.

3.15 Determining Who is Logged In (Current Sessions)

It may be necessary or convenient to see which user or users are logged on. This is easily done by looking at the "Current Users"   page in the Manage Users area. You will see one entry for each logged in user.

4 Login User Capabilities

TruView Global login users always begin at the "All Sites"   starting page after logging in. Login users have several different sets of capabilities available to them when using TruView Global.

- They can manage the settings of their login account
- They can select a site to visit

- They view a listing of all available TruView sites
- They can view a sitemap of the selected site
- They can view a listing of all the ScanWorlds in that site
- They can review the meta data associated with that site
- They can select a ScanWorld in that site to visit
- They can view the meta data for that ScanWorld
- They can pan and zoom in the ScanWorld
- They can jump to another ScanWorld in that site
- They can measure in the ScanWorld
- They can access Hotlinks in the ScanWorld
- They can create new Hotlinks in the ScanWorld
- They can create saved Snapshots
- They can create markups
- They can edit the properties of markups
- They can look at saved Snapshots
- They can adjust units settings of Markups
- They can return to panoramic mode from a saved snapshot view
- They can control the visible number of neighbors in the ScanWorld
- They can show/hide some interface elements

4.1 Manage Account Settings

Login users can manage the setting on their account by entering the Settings page via the Settings menu selection at the top of all pages. Users can manage three areas of settings related to their account.

- Change profile information like name and email address
- Change password
- Change default language

4.2 Change User Profile Information

Select the "Change my info"   button on the Settings page

4.3 Change User Password

Select the "Change password" on the Settings page

4.4 Change Default Language

TruView Global uses English as the default language. It also attempts to recognize the operating system language and if it is not English, and is a currently supported language, then it changes the interface into that language. However, the user can change their account to use a different default language, which forces the interface to always use that language.

5 Using the Panoramic Viewer

The main activity and purpose of TruView is to use the panoramic viewer to review point cloud data of various places in the world and point cloud projects.

5.1 Zoom and Pan Controls

In Navigation or Measure mode you can Pan and Zoom.

5.1.1 Panning

Panning is the process of moving the direction you are looking. It is similar to turning your head, or panning a video camera. You can look up, down, left or right. There is more than one way to pan in TruView.

5.1.1.1 Pan Using the Mouse

By picking any point in the TruView display window with the left mouse button and holding it down you can pan in any direction by dragging the mouse in that direction.

5.1.1.2 Pan Using a Touch Device

When using a touch device, by default it will be in a new pan mode that will follow your finger direction.

You can change the mode to work in the traditional manner from the floating hand icon in the upper right section of the TruView display window. By touching any point in the TruView display window you can pan by dragging your finger in that direction. The farther you drag from the point you first touched, the faster the scene pans. The red arrow shows the direction and how fast (arrow length) you are panning.

5.1.2 Zooming

Zooming is the process of moving towards or away from the direction you are looking. It is similar to moving your head closer to or further from a picture. There is more than one way to zoom in TruView.

5.1.2.1 Zoom Using the Mouse

With a wheel mouse, pick any point in the TruView display window by depressing and holding the wheel and move the mouse down the screen to zoom in and up the screen to zoom out.

5.1.2.2 Zoom Using a Touch Device

Pinch to zoom is enabled on touch devices, pick any point in the TruView display window and with two fingers pinch out to zoom in. Similarly, pick any point in the TruView display window and with two fingers pinch in to zoom out.

6 Tabs

This section discusses the fields in the following left Control Panel accordion tabs:

- **Snapshots** - This tab allows you to see each and all saved Snapshots.
- **Snapshot**- Markup mode, which lets you place markups such as rectangles or text. After creating a Snapshot you are in Snapshot mode, the view is frozen like a screen capture or snapshot. Markups are placed as a group together on a saved (frozen) Snapshot view. You can create many saved Snapshots, each with its own group of markups and its own name.
- **Take Measurements** - Selecting this tab puts you in 3D Measure mode, which lets you move your viewpoint in, out and around the scene so you can find and look at your exact area of interest. It also lets you measure between two points or get the coordinate information for a single point. However, this mode does *not* place those values as permanent markups. They disappear if you change modes. It only reports them in the properties table at the left of the screen. If you want to place a dimension markup, use Snapshot Markup Mode.
- **Neighbors** - Selecting this tab allows you to change the Neighbor TruView Display Criteria.
- **GeoTags / Hotlinks** - Selecting this tab allows you to see all the Hotlinks that were created in TruView or GeoTags that were Published from Cyclone. The user also has the ability to modify any of the properties attached to a Hotlink.
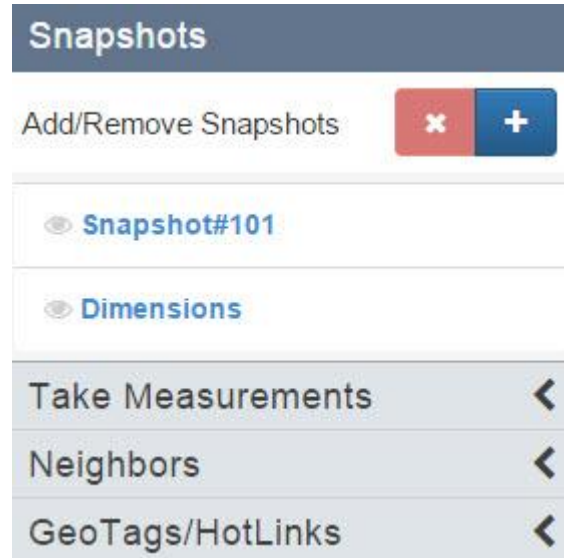

6.1 Snapshot and Markups
Creating and naming a new Snapshot will open the Create Markups tools, which allows you to place markups such as arrows, rectangles or text on top of a TruView scene. When you are in markup mode the view is frozen like a screen capture. Multiple Markups are saved as a group on a Snapshot view. You may save many Snapshot views, each with its own name and group of markups. You may rename and delete saved Snapshots by clicking on a Snapshot and clicking the edit icon next the the Snapshot name. To get out of the Snapshot mode, click the lock icon in the upper right corner of the TruView display window.

6.1.1 About Markups

To learn more about placing and editing markups see the [Using and Creating Markups](#) section.
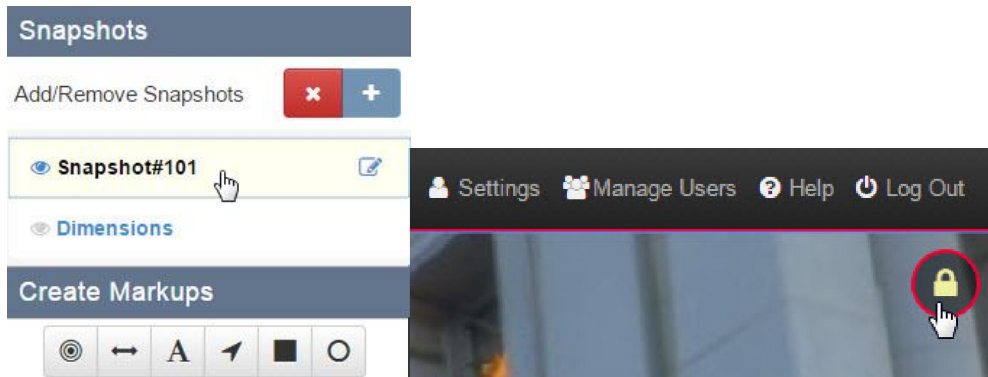
6.2 Take Measurements

Selecting the Take Measurements accordion tab puts you in 3D Measure mode, which lets you move your viewpoint, zoom in (mouse wheel), out and pan around the scene (hold down left mouse button) so you can find and look at your exact area of interest. It also lets you measure between two points or get the coordinate information for a single point. While in 3D Measure mode, your measurements appear in the Measurement Properties table under the Control Panel at the left of the screen. However, this mode does *not* retain those values as permanent markups. They disappear if you change modes. If you want to place and save a dimension markup, use Snapshot Markup Mode.
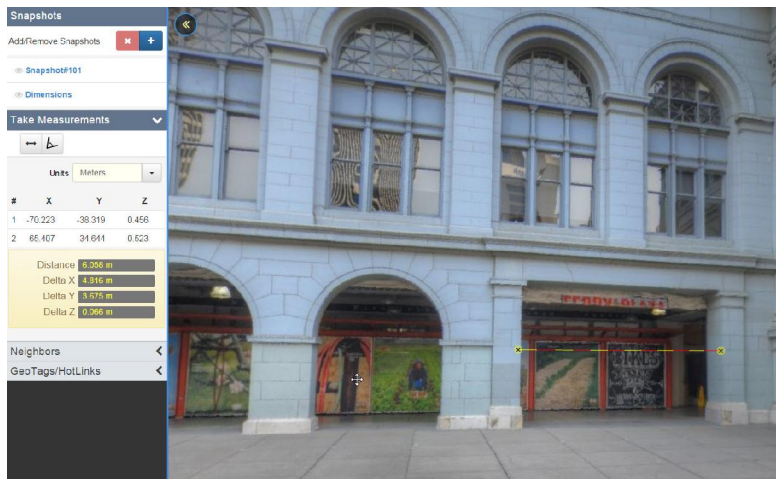
6.3 Measure Display

List of Vertex and Distance objects in the current Truview.

6.4 Measure Properties

Unit: Select Meters, Centimeters, Millimeters, Feet, Inches, Yards, or US Survey Feet

Vertex (Coordinates of a point are displayed.)

#: Number of pick point, X: coordinate of the chosen point, Y: coordinate of the chosen point, Z: coordinate of the chosen point.

Distance between two selected coordinate points is displayed if two points are selected. Zero is displayed if a coordinate point (XYZ) is chosen.
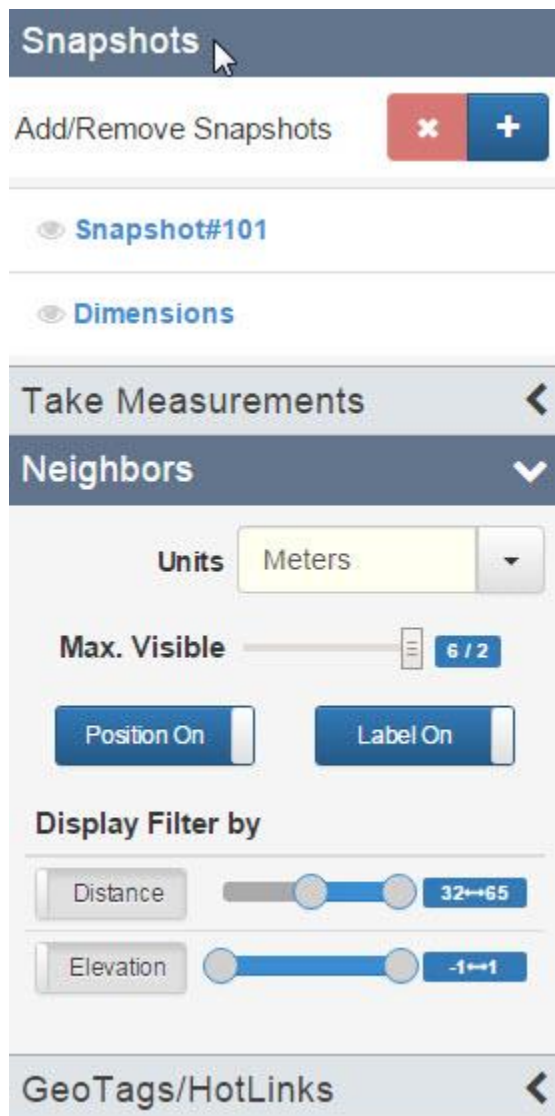
Delta X: Distance in the x direction between two chosen points.

Delta Y: Distance in the y direction between two chosen points.

Delta Z: Distance in the z direction between two chosen points.

6.5 Neighbors

Selecting this tab allows you to change the display criteria of neighboring TruView scenes.

Neighbors / File Mgmt Tab with "Neighbor TruViews", "Display Criteria", and "Markup Data" panes visible.

6.6 Neighbor TruViews

Max. Visible: The slider will change the number of neighboring TruViews that are displayed. (The default is set by the TruView Publisher in Cyclone.) If n is the number of neighboring TruViews to display, then the closest n are displayed.

Positions: Click this box to toggle the display of all neighboring TruViews.

Labels : Click this box to toggle all of the TruView Neighbor labels.

6.7 Display Filter

Use the display filters to set bounds on the ScanWorlds that are displayed. This can be useful if you only want to see the one or two ScanWorlds rather than 20 or 30 down a highway. Also, you can display ScanWorlds only on one floor of a multi-story building with ScanWorlds on each floor.

Elevations are relative to the coordinate system of the project (not absolute to the scanner).

The units for Distance and Elevation can be changed from the Units pull down menu.

6.8   GeoTags / Hotlinks

The Hotlinks Tab allows you to review and edit any of the hotlinks that were created in TruView or published from GeoTags in Cyclone, also Hotlinks can be created by clicking the Add/Remove "+" button. Click on a Holink in the list and the TruView display window will turn to and zoom to that Holink.

6.9   GeoTags / Hotlinks Properties

Tag/Index: This field is mandatory. Provides the listed name in Hotlinks tab.

Category: This field is mandatory. However, is this field is left blank it will default to *Misc*.

Label: This field is mandatory. However, if this field is left blank it will use the Tag/Index name. The label appears next to the Hotlink on the TruView screen.

Link: Link to a website URL (http://) or a local file (file://). This field is optional.

7   Metadata and Help

7.1 Metadata Button

Clicking on the scan name link in the upper bar displays the Metadata screen. It contains information about the TruView scene that is open. Following is an example of a Metadata screen.

UID: Unique ID for the scene. This is generated automatically and cannot be changed in TruView.

Background Dim: Dims the parts of the background for which a point cannot be picked, because it was not part of the Scanworld. This is always ON and cannot be turned off.

Scan Meta: Data about the Scanworld

Coordinate System: Coordinates of the scanner location for the Scanworld
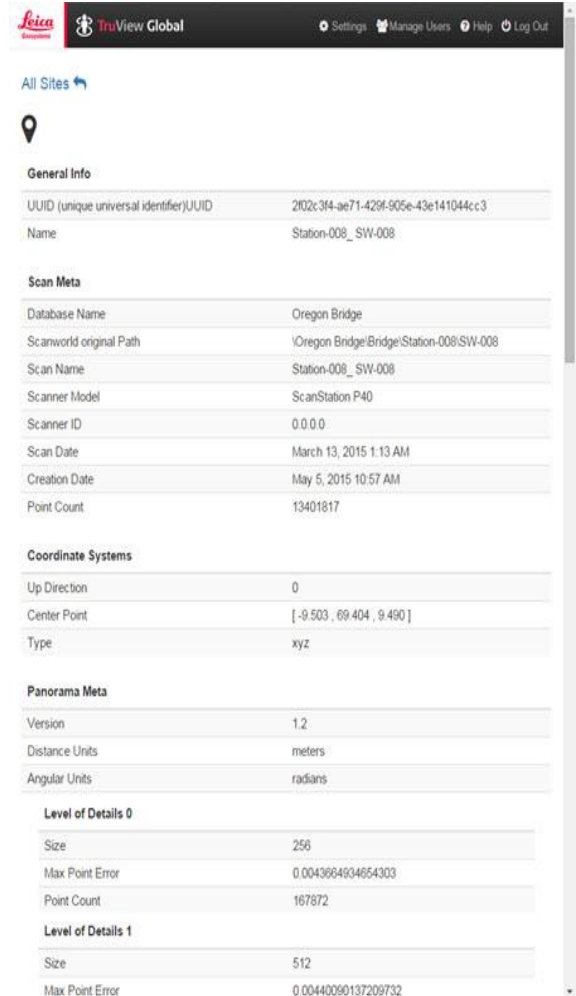
Panorama Meta: Shows the maximum error, point count within the display, and size for the given LOD value.

View Defaults: Default values when the view is opened

LOD Meta: Default values when the screen is opened

Owner Info: Information about the publisher of the Scanworld

Clicking the right mouse button and choosing "Print" allows you to print the metadata.

Meta Data Screen Example

7.2 Help Button

Click on the Help button to display TruView Help and obtain information about the version of TruView that you are using.

8 Using and Creating markups

8.1 Markups-Overview

TruView allows you to create markups on your Snapshots. Markups consist of lines, circles, rectangles, and dimensional information in the form of a coordinate location or the distance between two points.

8.2 Settings

Several settings can be used to manage the display attributes of the markups in TruView. You can control:

- Units of measure
- Color (of all entities)
- Fill color (of rectangles and circles)
- Transparency (of fill color)
- Line thickness (of circles, rectangles and arrow lines)
- Font size (of text)

You can change these values for each entity by selecting it for editing and changing the values in the markups panel.

8.3 Creating Markups

To create a Snapshot Markup you simply need to click the "+" button below the SnapShot menu. The after the Snapshot is created click on the named SnapShot to add Markups. These are called "Snapshot Markups" because as soon as you place a markup the screen is "Frozen" and a Snapshot is created.

After you place a markup and a snapshot has been created, you can add other markups to that snapshot.

To create another snapshot with more markups you need to switch back to 3D Measure mode and change the viewpoint. Now you can start creating more markups in this new location and they will be placed into a new snapshot.

You also can recall an existing snapshot (from the Markups Tab) and add additional markups to the snapshot.

8.4 Markup Display

Current named view (e.g., Snapshot#101)

List of drawing objects (Distance, Position, Line, Rectangle) in the current view. Selecting an item in the list highlights that object in the view.
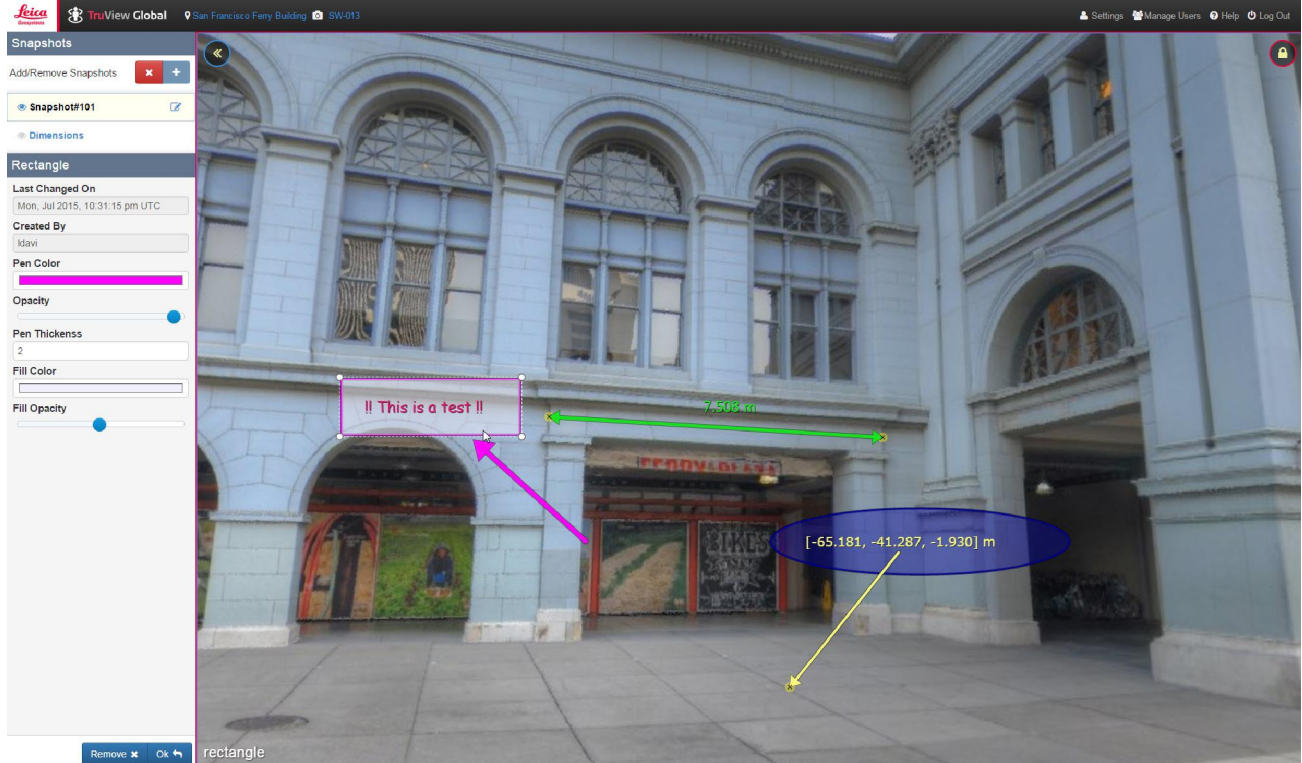
8.5 Markup Properties

Last Changed On: Date when a specific markup was last changed. It is only displayed when a markup is selected.

Created By: Name of the person who created a specific markup. It is only displayed when a markup is selected.

Pen Color: Color chosen for lines, shapes and text

Opacity (%): This value determines the shade of the fill color. (A percentage where: zero = opaque and 100 = totally transparent (invisible).)

Fill Color: Color chosen for filling shapes. The actual fill color is the transparency percentage of this color.

Font Name: The type of font that will be used (some markups will not have this field)

Font Size: The size of the type in points (some markups will not have this field)

Unit: Choice of meters, centimeters, feet and inches (some markups will not have this field)

Remove button: Click to delete a selected markup (line, text, shape, coordinate, etc.)

8.6 2D Markup Tools

The Snapshot Markup section of the Navbar provides a variety of markup types to annotate TruView scenes.

When your first Snapshot Markup is placed on a TruView scene, a new 2D frozen Snapshot image is generated along with your markup on it. This image is saved in the Snapshot list as an exact, retrievable view of the current camera angle. Snapshots may be renamed in the Snapshot Properties panel.

8.7 Editing Markups

You can edit any markup by first selecting it in the view area. "Handles"   appear when a markup is loaded. You can also select the markup in the list of markups on the Markup Tab.

- Arrow Lines, Rectangles and Circles can have their location and size changed. You can also adjust the properties.
- Text can be moved, the properties can be changed, and you can edit the text string by right clicking on the text item in the view area and selecting Edit Markup from the right click menu. The cursor is placed at the end of the string, and you can only delete characters, add characters, and backspace.
- Dimension labels (Coordinate and Distance) can have only the location of the text label moved. You can also change the properties.

8.8 Deleting Markups

Select the markup in the display area or in the markup tab list and press the Red button next to the Add/Remove GeoTags.

8.9 Auto-saved Markups

When you create markups, they are automatically saved in TruView. Therefore, you never need to save the markups yourself.

8.10 Snapshot Markup Properties

When any markup is selected you can set the properties for this entity in the Markup Properties tab. Different markup types have different markup properties that apply. For instance, an Arrow Line does not have any valid Font Size property.

The available properties are:

- **Unit**: The unit of measure for dimension labels
- **Color**: Main color for line work
- **Fill Color**: Background fill color for Circle, Rectangle, Text and Dimension Label text.
- **Transparency**: A percentage where: zero = opaque and 100 totally transparent (invisible)
- **Line Thickness**: A relative factor controlling thickness of main line work of all markups except text.
- **Font Size**: For all markups with string characters
- **Link**: any valid hyperlink location

9   Markup Metadata

When markups are created they retain some Metadata. You can see this data displayed in the Markup Properties table on the left Control Panel, Markups accordion tab. The Metadata retains the date the item was created and the Windows login user name that created the markup.

9.1   Adjust unit settings of Markups

Several settings can be used to manage the display attributes of the markups in TruView. You can control:

- Units of measure
- Color (of all entities)
- Fill color (of rectangles and circles)
- Transparency (of fill color)
- Line thickness (of circles, rectangles and arrow lines)
- Font size (of text)

9.1.1   Look at saved Snapshots Markups

Markups (and Snapshots) are automatically saved as you create them. The next time you visit the same TruView scene you will see all of the Snapshots you created (on the Snapshot tab), and you can recall each Snapshot to review the markups.

This "saving"   is automatic. You do not need to do anything to have the Snapshots saved.

10   Switching modes
10.1 Return to Panoramic mode from Snapshot mode

The tab sections of the Navbar and the accordion tabs on the left Control Panel are guides to help users know what mode they are in.

There are several ways to switch between the various modes. Modes switch automatically to a new correct mode as your mouse navigates and performs actions. For example, clicking on a Snapshot Markup tool automatically switches you into the Snapshot Markup mode.

TruView always starts with the 3D Navigation mode activated, highlighting the 3D Measure tools section of the Navbar.

10.2 To Enter Measure Mode

Select the Take Measurements from the left Control Panel


And Select Measure Distance or Angle

In Measure mode you can pan and zoom as well as take measurements. The properties of your 3D Measurements are displayed in the left Control Panel under Measurement Properties.

Measurements are retained until you switch modes to Snapshot Markup or View mode. When you switch modes, all the measurements are cleared. (Distances between points and coordinate points are saved in the Snapshots created in Snapshot Markup mode.)

10.3 To Enter Snapshot Markup Mode

Select Add new Snapshot from the left Control Panel
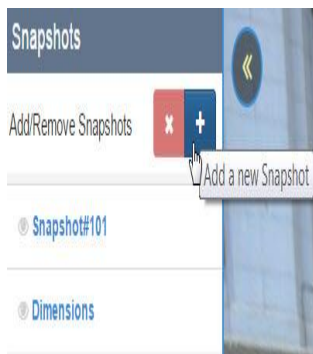
And select any of the markup tool icons from the Snapshot Markups toolbar
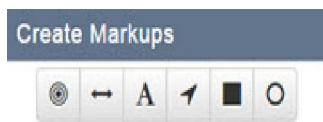
A selection of markup types is available in Snapshot Markup mode. Markups are placed on a 2D frozen "Snapshot" image. This image, along with its markups, is saved as a recallable Snapshot view.

10.4 To Enter View Mode

View mode works in conjunction with the Measure mode which allows you to pan and zoom through the TruView. You can also move to a previously saved Snapshot Markup view by clicking on the Snapshot name displayed in Snapshots or Snapshot Markups left and right arrow buttons.

10.5 Measure in Measure Mode versus Measure in Snapshot Markup Mode

The definition of Measure in the Measure mode for TruView is not the same as a Markup Dimension. In Measure mode, measuring is not a drafting or markup function. It is simply measuring the distance between two points or extracting the coordinate location of a single point. The measurement values are shown in the Measure Properties Panel. However, in Snapshot Markup mode measuring is a "permanent" Markup function, saved in individual Snapshot views.

11 FAQ / Troubleshooting

Q: What is LOD?

A: LOD is the Level of Detail being displayed. It is proportional to the maximum point error. Zooming in or out changes the LOD that is displayed.

Q: What is the default transparency?

A: The initial system default transparency is 87%.

Q: How do I change the units for a Distance Markup Object?

A: Click on the Distance Markup Object. Then choose your new units from the Unit drop-down menu.

Q. My 3D Markup is not very accurate (repeatable), even though the precision is high. Why?

A. The 3D Markup can not be very accurate unless the view is really zoomed in. Zoom in as much as possible.

Q. How can I measure from a point in front of me to a point behind me?

A. Pick the first point in front, then pan to the back and choose the second point.

12 Legal

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