Qii.AI

Qii edge Manual

Ver 1.5

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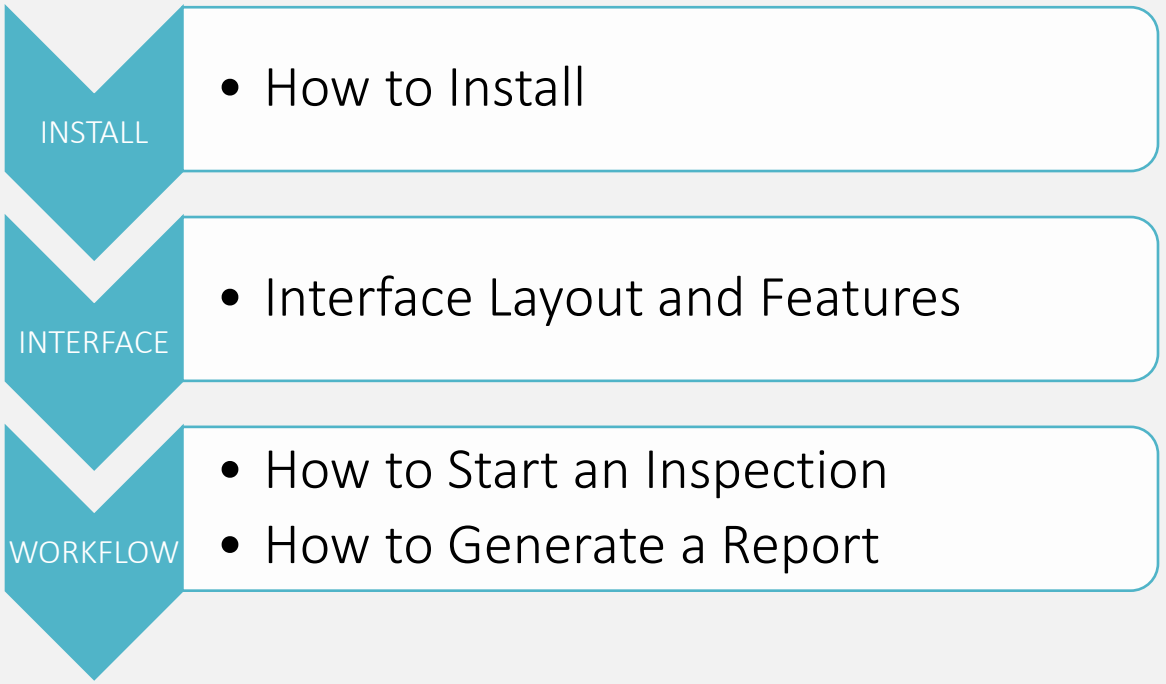
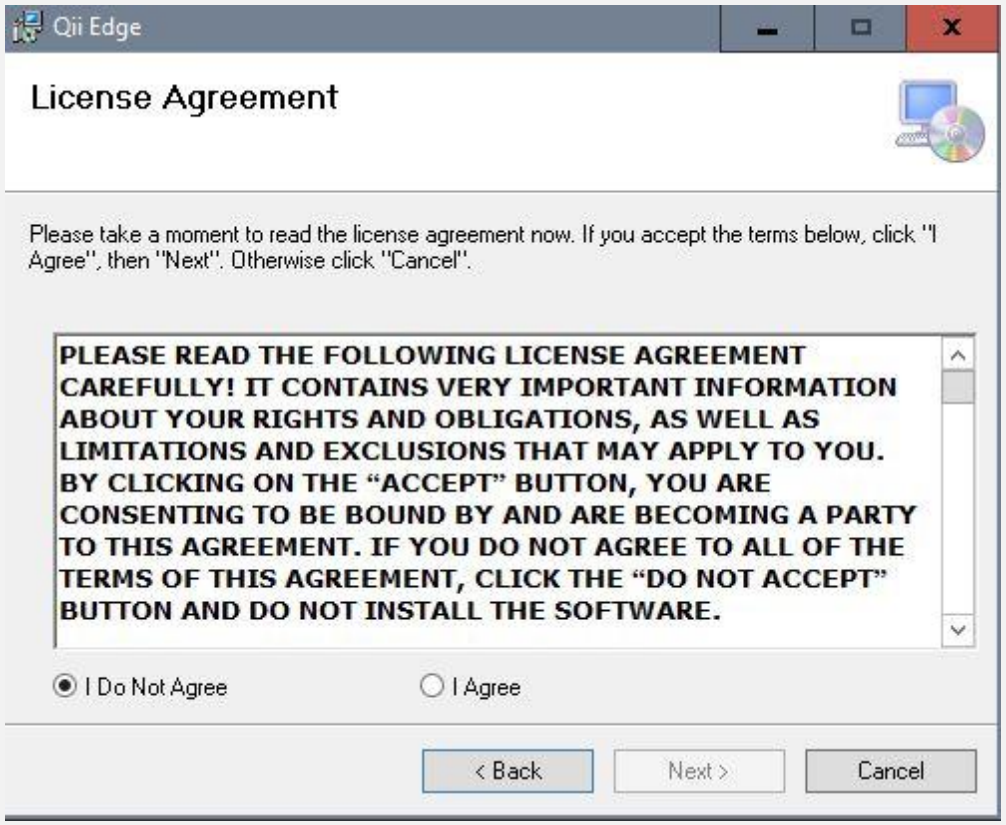
MANUAL OVERVIEW



INSTALLATION

1. Open the **Qii edge.msi** file
2. Select **Next** when the Setup Wizard opens.

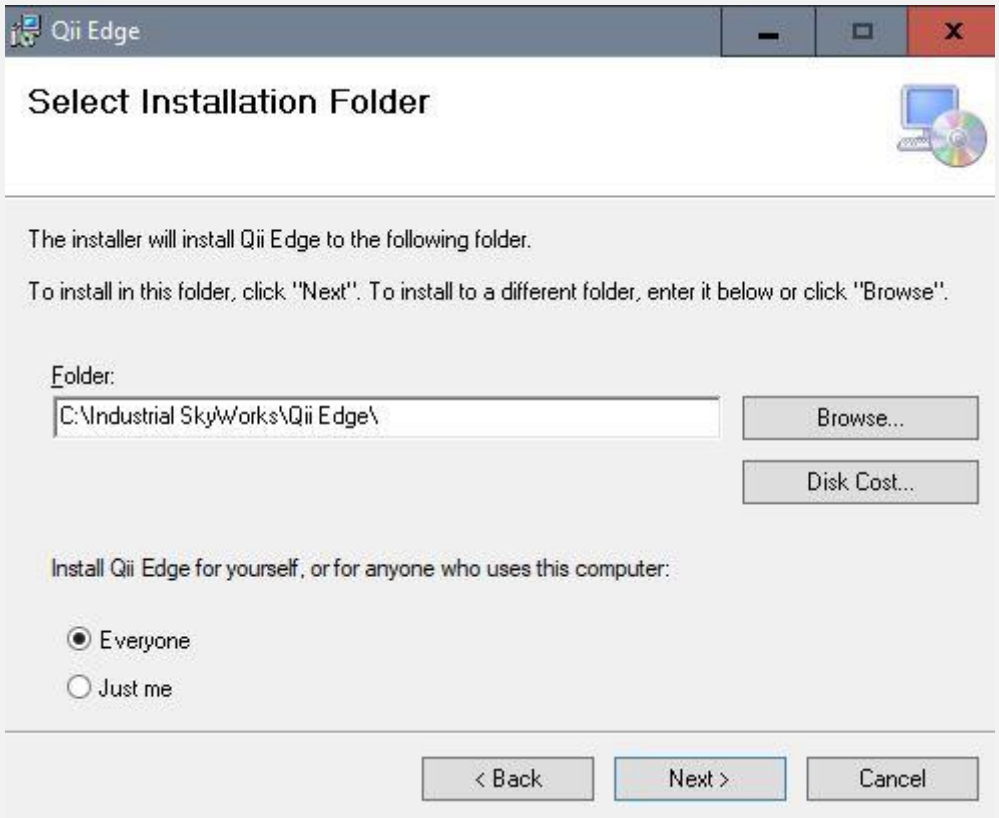
3. Read through the License Agreement if you agree , select **I Agree** and then click **Next**.



4. Accept the default or select the folder where Qii Edge will be installed. We recommend the default for trouble free installation.

   You can also choose to install the software for everyone on the computer or just your profile.

   Click **Next**.



5. Click **Next** again to confirm and start the installation.

Activate the Software

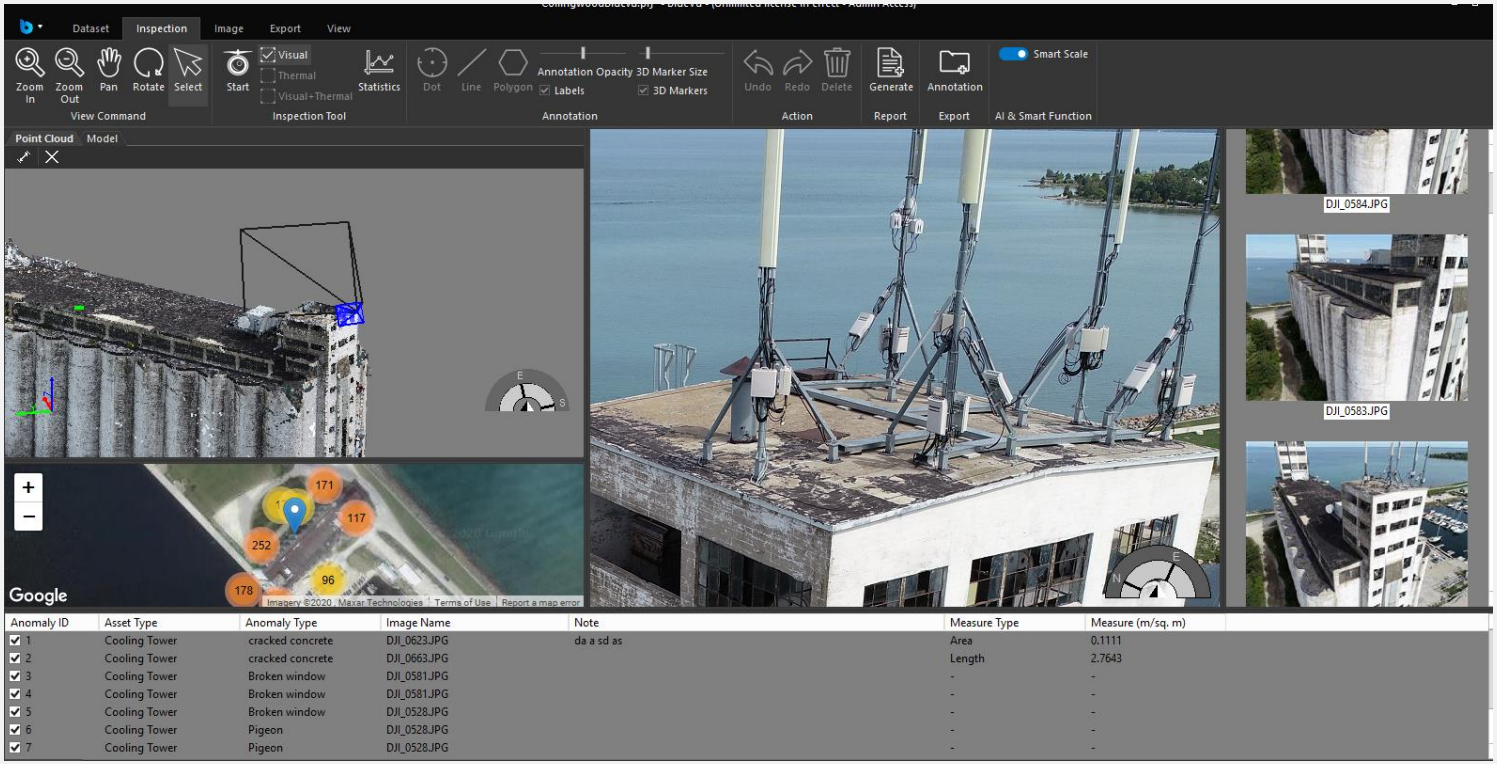
1. Open the newly installed Qii Edge application by selecting the desktop shortcut.
2. Fill in the login information this is the same you used to login to the portal
3. If validation is successful, Success, the software is now activated and will open.
4. You can only be signed into one computer at a time, login may fail if you are signed in On another computer.

(If unsuccessful contact support for more help)

INTRODUCTION

Congratulations you are now the proud owner of Qii Edge software. As an inspector you know with great power comes great responsibility.
Qii Edge is here to help you manage your responsibility wisely by allowing you to navigate, annotate and create reports from large number of images.
These images maybe created by drones, although any data set will work regardless of how it was captured. All the images first need to be processed through Qii Studio, this manual shows how to work with the processed project files on your desktop app.

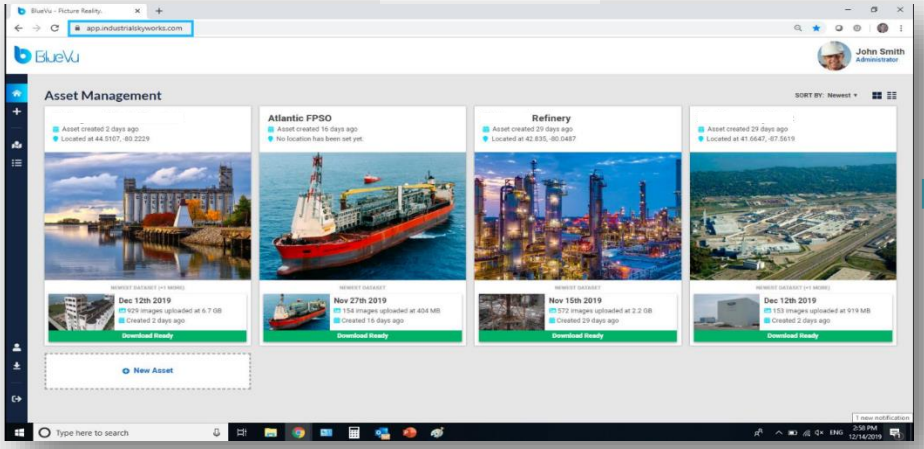
During the operation of the software if you have any questions please do not hesitate to reach out to our support. (support@industrialskyworks.com).



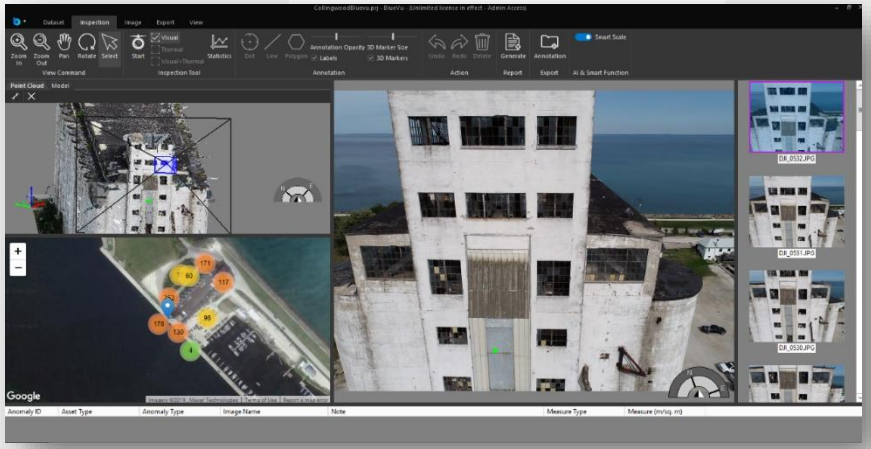
KEY POINTS:

- No stitching of images, you work with the raw untouched images for your inspection work.
- You can quickly navigate large amounts of data either through a digital twin (3D model) or a map view
- Works with large datasets that create a 3D model or with a small number of pictures for a 2D view.
- Works with Thermal data as well as regular photography, you can compare the two side by side.
- Annotation is fast and easy with customizable fields for every user.
- In 3D annotations are marked not just on the 2D photo but in 3D space and are measurable.
- Class leading reports are generated automatically with a few simple clicks.
- Local servers can be set up, so your data never leaves the security of your companies' network.
- Works with Qii Studio for auto processing of data

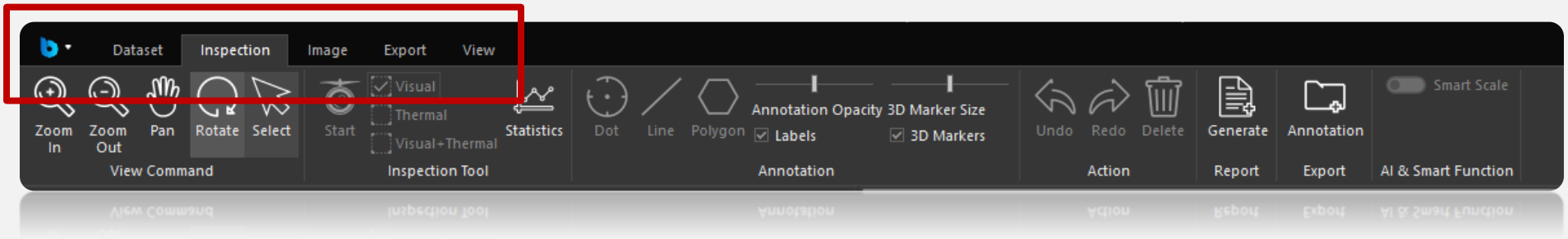
Qii Studio

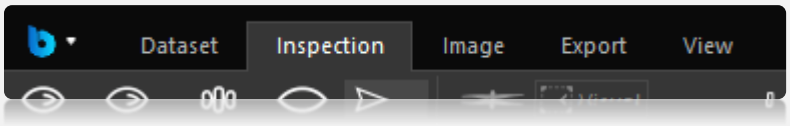


Qii Edge



TOOL RIBBON





The Tool Ribbon contains all the controls necessary for the use of Qii Edge.
It's organized into a ribbon format with tabs allowing for ease of use.

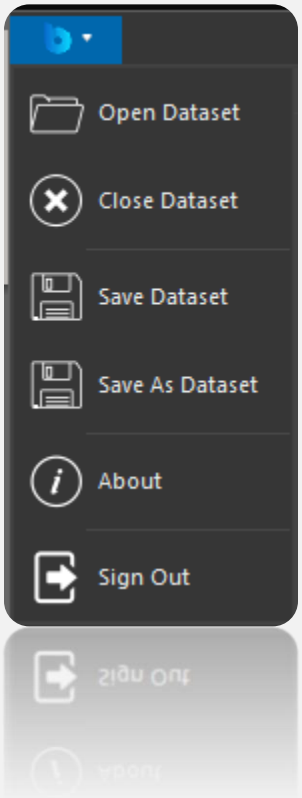
Qii Edge (b)
Dataset
Inspection
Image
Export
View

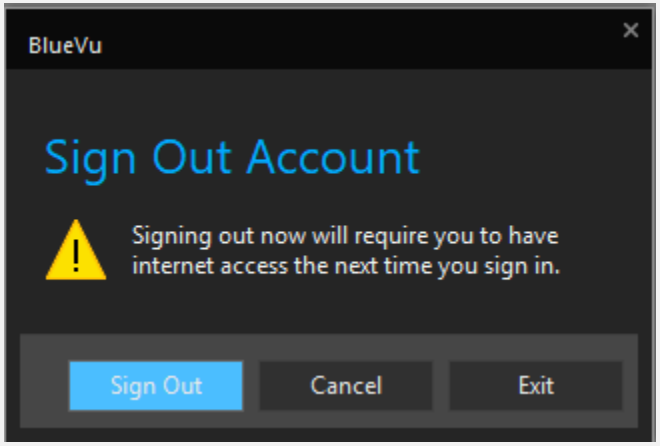
QII EDGE() TAB

This tab contains the functions for opening and closing as well as saving datasets

It also includes the Sign Out option.

(You must sign out of Qii Edge if you intend to use the software on another computer. Your account is licensed to your email. It cannot be used on more than one machine at a time.)



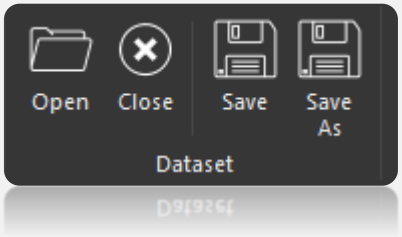


Clicking **Sign out** you will allow the software to be used on another machine.

If you click **Exit** you can use Qii Edge on the same machine without having to sign in again.

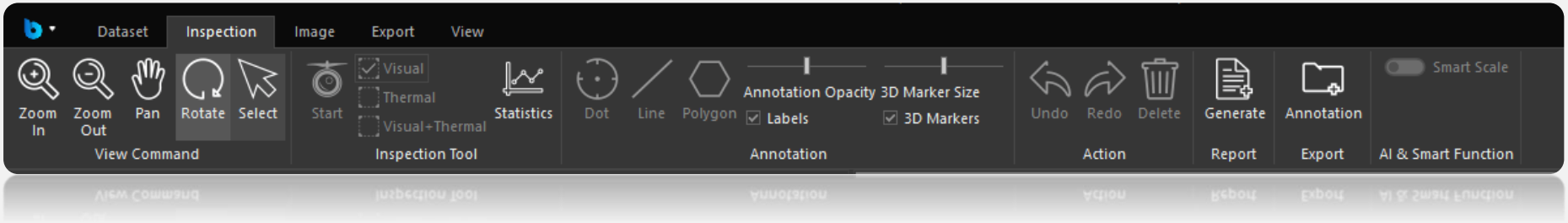
DATASET TAB

This tab contains the functions needed to create a new project, open an existing project and save a project to an existing or new file



New: Create a new Qii Edge project (*.prj).
Open: Open an existing Qii Edge project (*.prj).
Save: Save the current Qii Edge project (*.prj)
Save As: Save the current Qii Edge project under a new name. (*.prj)

INSPECTION TAB



This tab contains the functions needed to navigate through the 2D and 3D views, start and complete inspections on the imagery. See blow for more details of the inspection tabs functions.

SUBSETS OF THE INSPECTION TAB

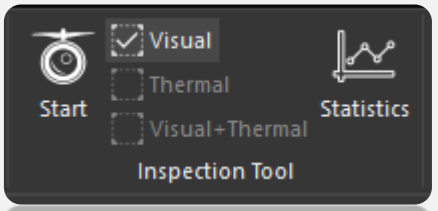
View Command

In order to rotate, pan or zoom in and out on the model, utilize the tools found in the *View Command* section.

Zoom In: Clicking in the 3D View and Image View with this tool enabled will zoom in at the point clicked.
Zoom Out: Clicking in the 3D View and Image View with this tool enabled will zoom out at the point clicked.
Pan: Clicking and holding down the mouse button with this tool enabled in the 3D View, 2D Map View and Image View will allow the view of the image or model to be shifted.
Rotate: Clicking and holding down the mouse button in the 3D View will allow for the ability to rotate the model
Select: Clicking on the Digital Twin with this tool will focus all other views (2D Map, Image View) on this location. Further, during inspections, this tool is used to select any annotation layers that were drawn.

Inspection Tool

Where you can choose between Visual Inspection data and/or Thermal data.



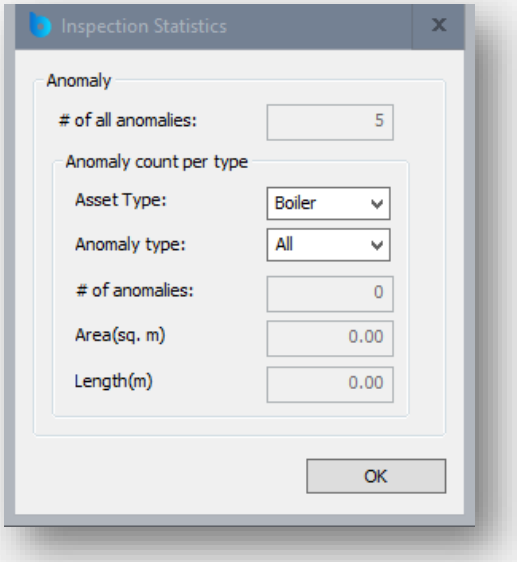
Start: Begins the inspection and enables the ability to draw points, lines, and polygons on the image. Clicking this button again will end the inspection.
You must click this to start the inspection process. The start Button will turn red when active

Visual: Displays the RGB images in the Image View and Thumbnails.

Thermal: Displays the Thermal images in the Image View and Thumbnails.

Visual + Thermal: Splits the Image View into two panes, one for RGB and the other for Thermal images

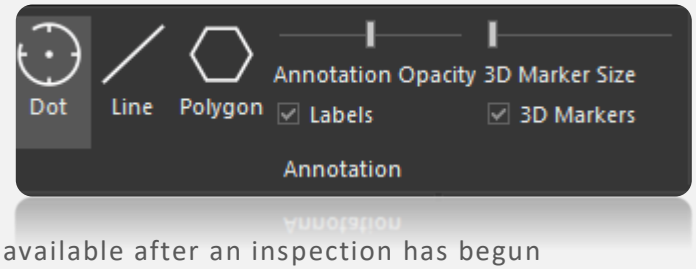
Statistics: Displays statistics about all areas identified in the inspection.
This includes the number of anomalies identified and the area these anomalies cover.



Annotation

The commands for marking up the 2D images

and changing the size and opacity of 3D labels

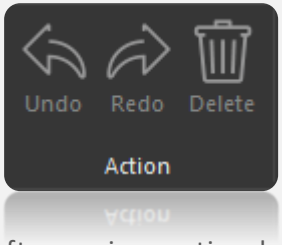


Note: These controls become available after an inspection has begun

Dot: Gives the ability to draw points on the image in the Image View.
Line: Gives the ability to draw lines on the image in the Image View.
Polygon: Gives the ability to draw polygons on the images in the Image View.
Opacity: This slider controls the visibility of any shapes drawn on the image
Labels: Enabling this will display labels with each shape drawn on the image.
3D Marker Size: Adjusts the size of the 3D Marker on the Digital Twin
3D Marker Turns 3Dmarkers On or Off on the Digital Twin/Mesh

Action

Where you can Undo, Redo or delete the last action



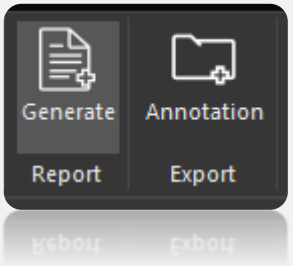
Note: These controls become available after an inspection has begun.

Undo: Gives the ability to undo any action in the inspection.
Redo: Gives the ability to redo any action that was previously undone.
Delete: Deletes any selected annotation. (selection in the annotation window or Inspection window)

Report/Export

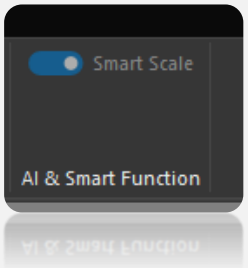
These functions are replicated in the Export Tab.

Generate: Create report.
Annotate: Exports *.shp file of annotation outlines.

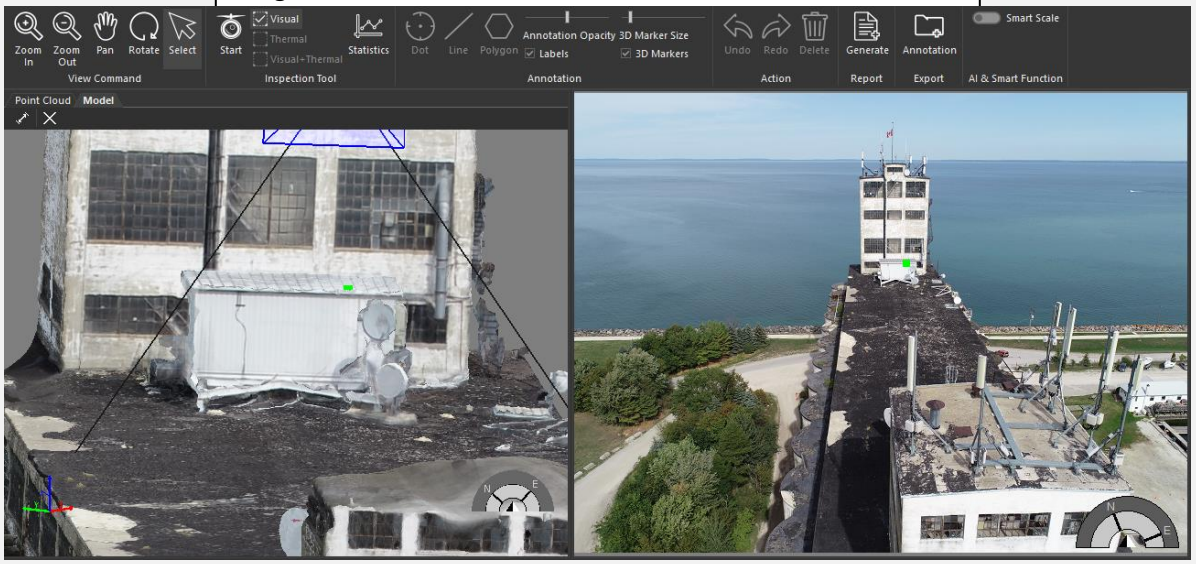


AI & Smart Function

Smart Scale: Smart Scale is used to match the maginification level of the Digital Twin with that of the photo or thermal image displayed in the inspection window. Turning it off means the photo will be at it's widest zoom level. On the software will try and match as accurately as possible the viewpoint of the 3D model. Therefore it is important to use the 3D model to find the best viewing angle before selecting the image



Smart Scale off, image on the right does not match the magnification of the 3D model



Smart Scale on, image on the right now matches the magnification of the 3D model

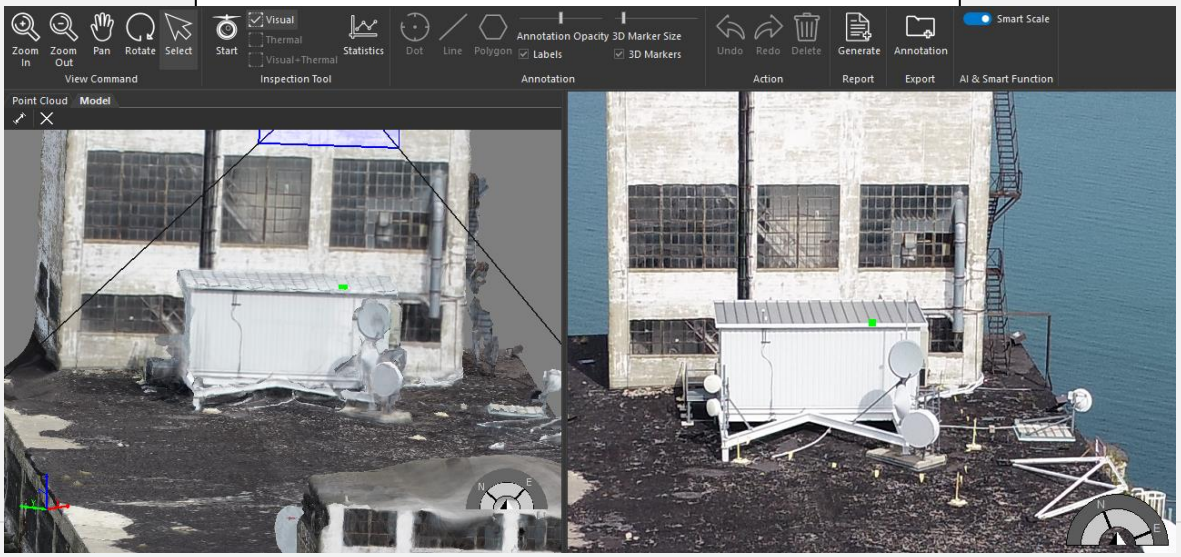
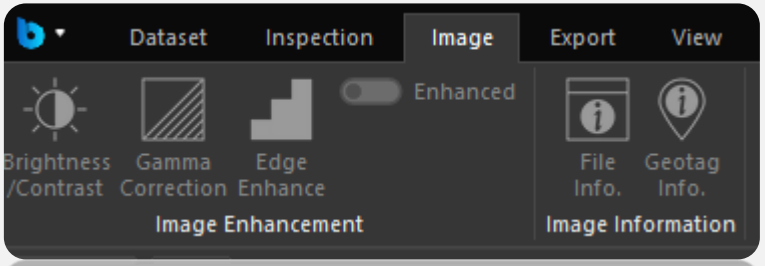
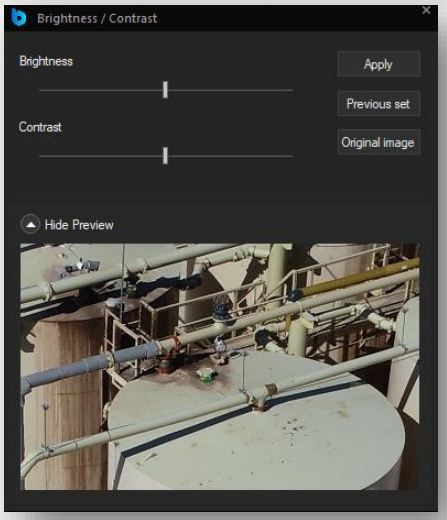


IMAGE TAB

This tab contains functions to adjust the 2D image for better or Clearer viewing. Also for Image information and Geo Tag information



Brightness /Contrast: Sliders to adjust the Image Contrast and illumination levels

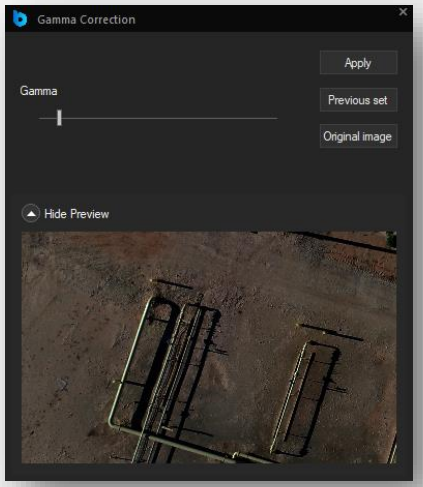


Use the sliders to adjust the preview image to your liking, then click Apply, the effect will then be applied to the full-size image.

Previous Set: Set the sliders to their last position.

Original image: Resets the sliders to their original setting.

Gamma : Slider to adjust the Gamma (black level) of the image. This adjusts the darker areas with overly brightening The lighter areas.



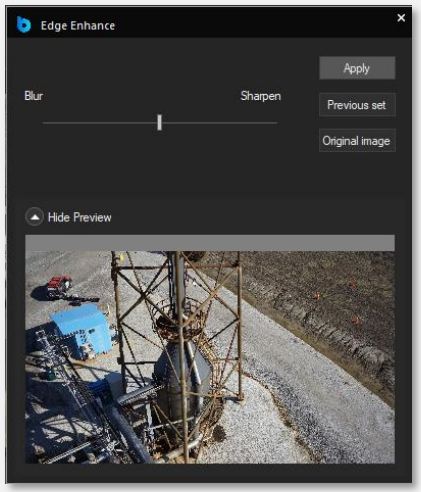
Use the sliders to adjust the preview image to your liking, then click Apply, the effect will then be applied to the full-size image.

Previous Set: Set the sliders to their last position.

Original image: Resets the sliders to their original setting.

You must hit apply for any changes.

Edge Enhancement: Slider to show edges more clearly



Use the sliders to adjust the preview image to your liking, then click Apply, the effect will then be applied to the full-size image.

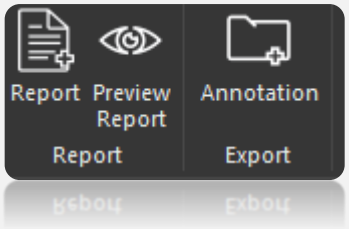
Previous Set: Set the sliders to their last position.

Original image: Resets the sliders to their original setting.

You can toggle the enhanced versions on or off with the toggle switch.

EXPORT TAB

This tab contains the functions needed to export annotation to shapefile (*.shp)as well as to generate a report, the report is created in PDF format.
The User must have a PDF viewer installed to view reports.
Qii Edge does not have Its own internal viewer.



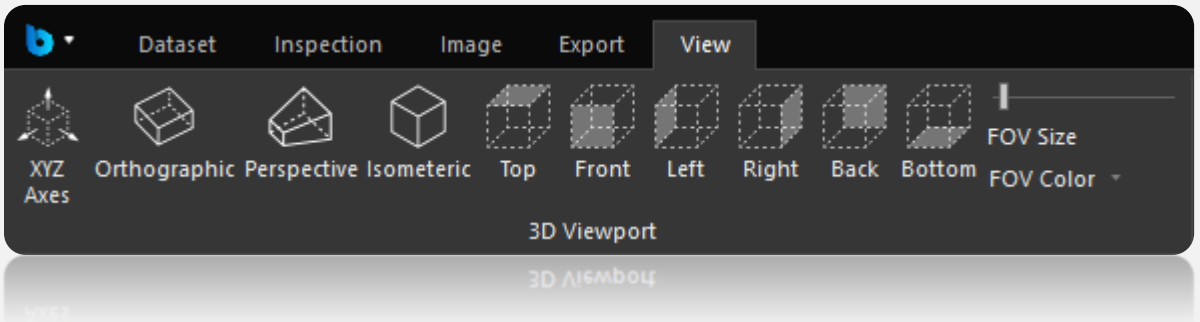
Report: Begins the report generation process based on any inspection that has been completed. Save's the report in a location specified.

Preview Report: Generates a report preview based on any inspection that has been completed. The Report is not saved unless the users saves via the PDF viewer

Annotation: Exports the annotation from the inspection as a shapefile (*.shp) for use within GIS software. The export is of the marked anomalies areas only. This can be imported into CAD or other software. We do not currently export the whole Digital Twin model as a *.shp file

VIEW TAB

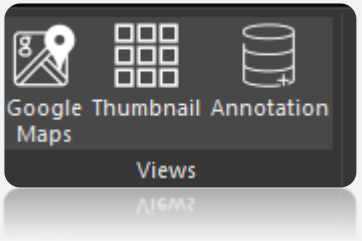
You can switch viewpoints in a single click and adjust the size and colour of the field of view window of the camera position.



XYZ Axes: Turns the XYZ axes lines on and off.
Orthographic: Changes the 3D View to display the Digital Twin in orthographic mode.
Perspective: Changes the 3D View to display the Digital Twin in perspective mode.
Isometric: Changes the 3D View to the Isometric predefined view.
Top: Changes the 3D View to the Top predefined view.
Front: Changes the 3D View to the Front predefined view.
Left: Changes the 3D View to the Left predefined view.
Right: Changes the 3D View to the Right predefined view.
Back: Changes the 3D View to the Back predefined view.
Bottom: Changes the 3D View to the Bottom predefined view.
FOV: Changes the size coloured Field Of View rectangle.
FOV Color: Changes the colour of the Field of view rectangle.

Views

Controls which windows are displayed.



Google Maps: Turns the 2D Map View pane on and off.
Thumbnail: Turns the Thumbnail pane on and off.
Annotation: Turns the Annotation windows on and off.

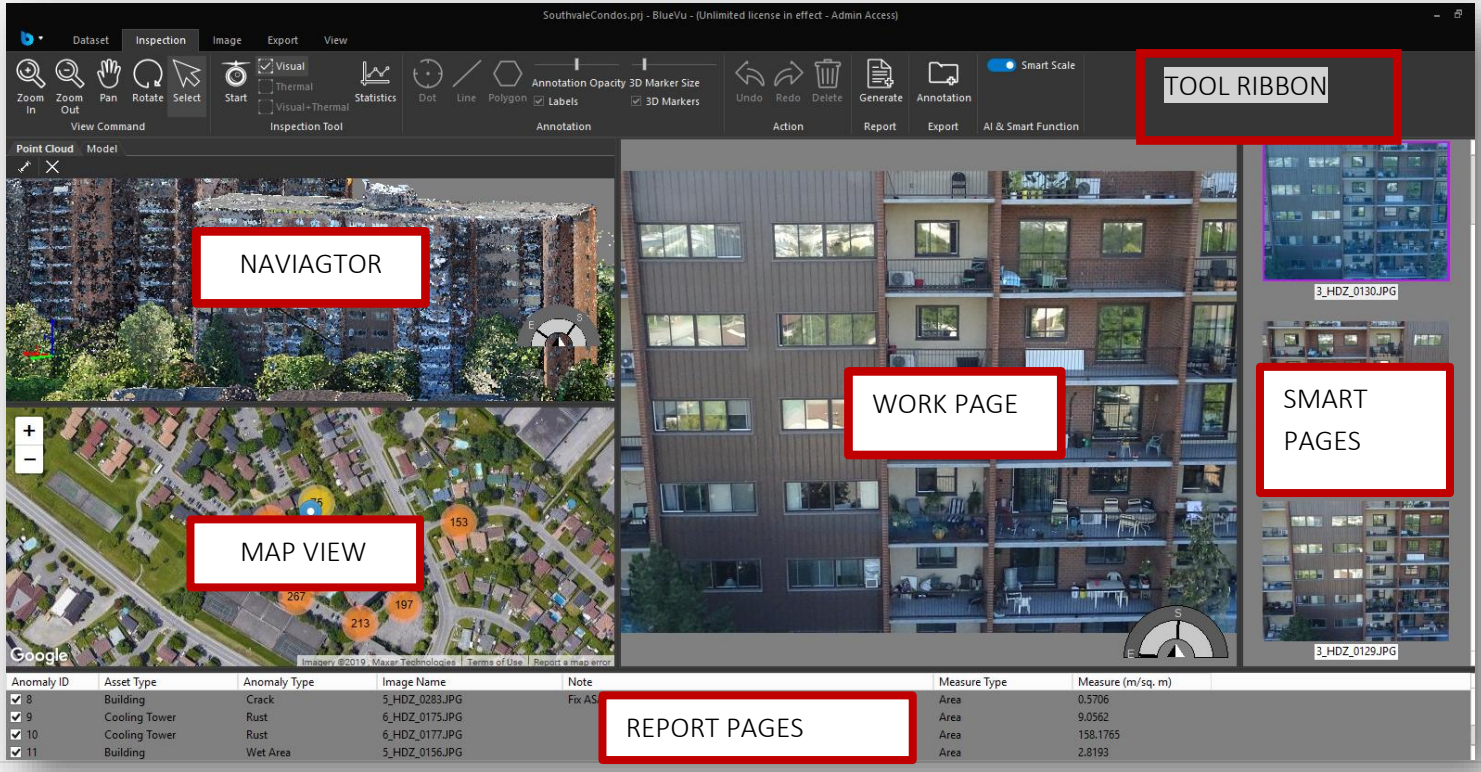
INTERFACE DETAIL

Qii Edge's interface is designed for intuitive operation. It is customizable and designed to focus on the images you are inspecting. The main goal is to ensure you have clear situational awareness of where images are located on the asset This is achieved by a 3D model and or a 2D map

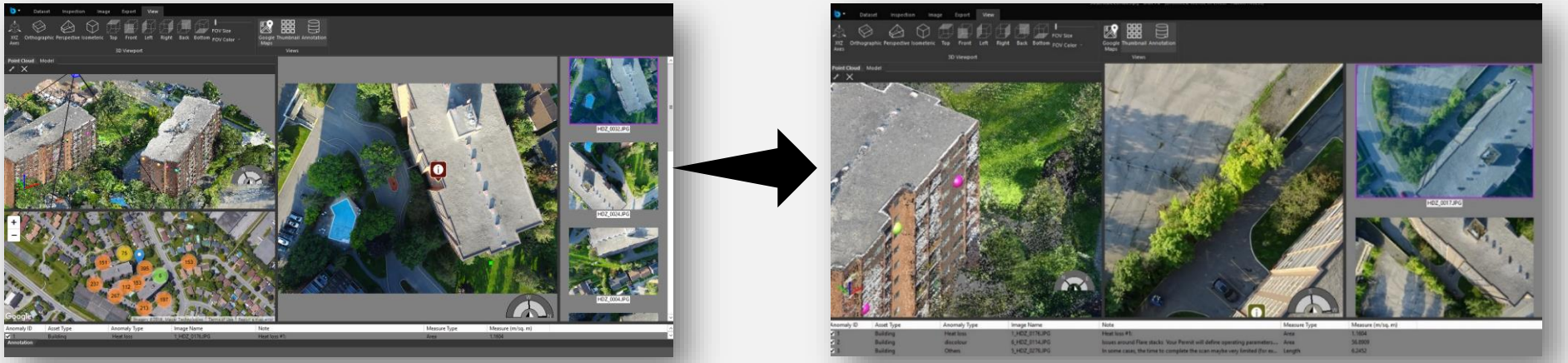
The 3D model shows clearly the camera viewpoint and a field of view. This Field of view is customizable. Its default is represented by black lines and Blue rectangle. It shows not only the location of where the image is taken but the heading and angle the camera was pointing at.

The Map view allows the user to see a top down location of the geotagged images. It is an easy way to see which images were taken nearest the asset under inspection. It does not show heading or angle of the photo being inspected.

Tool Ribbon
Navigator
2D Map View
Workpage
•Smart Pages
Report Page
Window



Resizable Windows

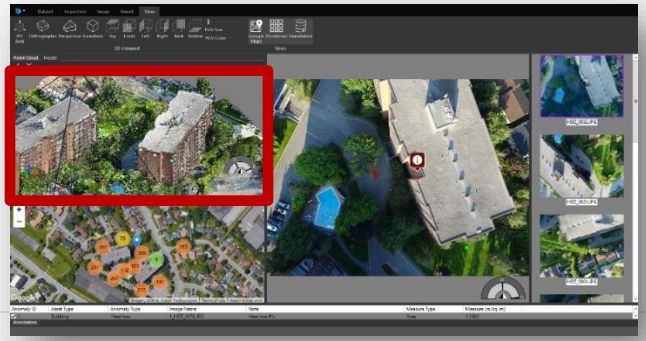


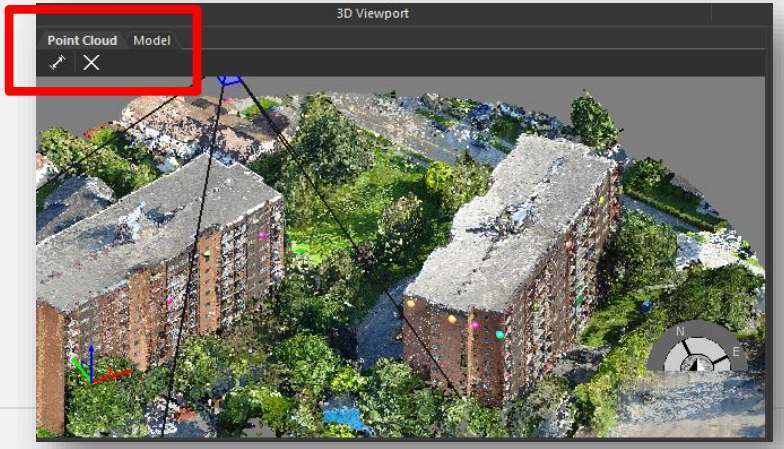
All the Windows are resizable. You hover over the window divider and then drag window to the size you want.
Above are examples of windows resized and one removed via the View tab.(maps).

NAVIGATOR

The 3D Navigator View is the container for the Digital Twin and/or model of the structure to be inspected.

In the Window there are:
Tabs to switch between a Digital Twin and Model
Measurement tools, Measure / Cancel Measurement





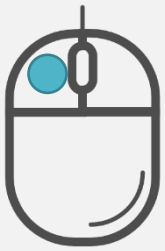
Control

- In order to rotate, pan or zoom in and out on the model, utilize the tools found in the *View Command* section.

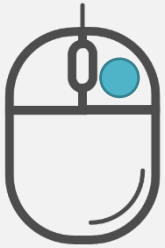
  Most commands can be done via the mouse.

Mouse Control

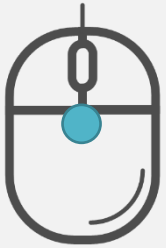
Left Click
Select



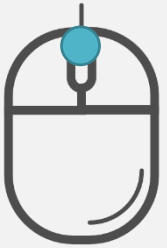
Right Click
Rotate around Click Point



Centre Wheel Click
Pan/Move



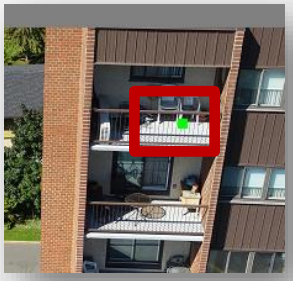
Centre Wheel Scroll
Zoom In/Out



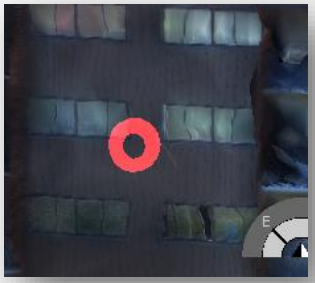
Note: Selecting Rotate on the View Command ribbon rotates the object around it's Centre.
Rotate using the mouse rotates the object around the point of the mouse cursor.

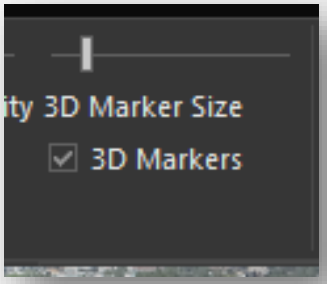
Elements of the 3D Navigator window

Focus Point: This Green dot represents the point clicked by the Select Tool and is symbolized by a green square.
On the 3D model the 2D Image and the Thermographic image.



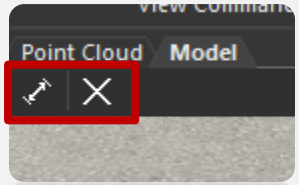
Select Tool: This shows you the position of the cursor.
You can adjust its Size by adjusting the 3D marker slider. Which also adjusts the 3D marker size.

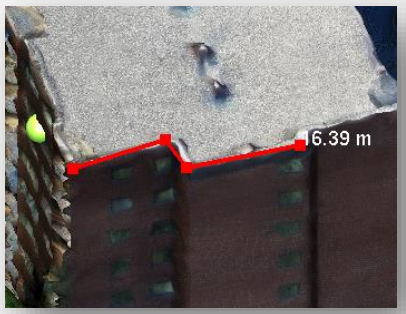




Anomalies: These represent any anomalies found during the inspection and are displayed as a colored sphere on the Digital Twin.
The color corresponds to the type of anomaly found.
The Colour is selected via the Annotation Dialogue.

Measurement: This is where you measure on the Digital Twin.

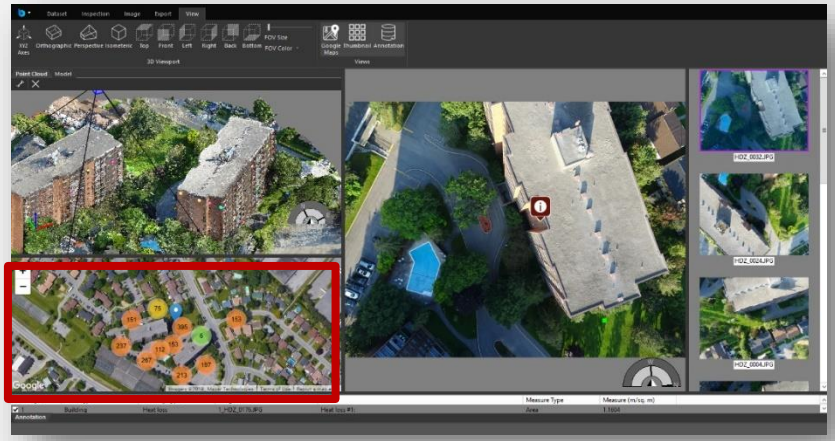




The left Icon starts the measure tool
The 3D model: The right Icon cancels the measurements.

2D Map View Window

The 2D Map View utilizes Google Maps to show a two dimensional spatial representation of the structure being inspected.

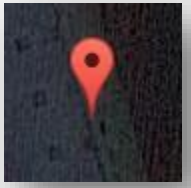


By clicking on any of the camera icons, the corresponding image will be displayed in the Image View and 3D View.

- This pane utilizes standard Google Maps controls such as clicking and holding to pan the map and using the mouse wheel for zoom. There are also the tools on the top left and right bottom sides for base map, zooming and street view functions.

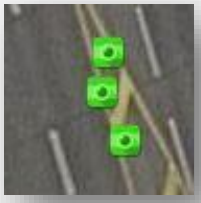
Elements of the 2D Map View

Focus Point: This represents the point clicked by the Select Tool and is symbolized by a red marker.



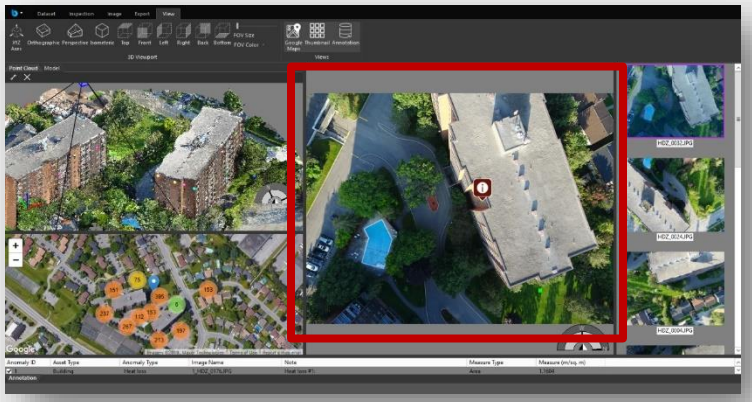
RGB Photos: The RGB photo locations are represented as grey camera icons.
The image that is currently selected in the Image View will show up as a red camera icon.

Thermal Photos: The thermal photo locations are represented as green camera icons.



Workpage

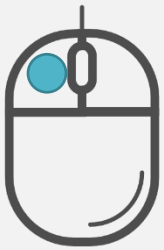
The Workpage window contains the full resolution image currently being inspected. When a location is selected on the 3D View, the best image representing the clicked location will be loaded into the Workpage View.
This is where the inspection digitizing is completed.



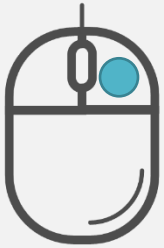
Control

.

Left Click
Select/Draw
Anomaly

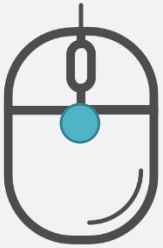


No Function



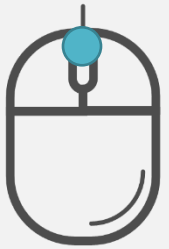
Centre Wheel Click

Pan/Move



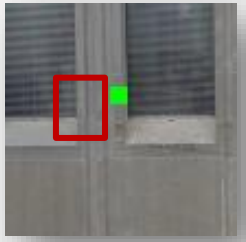
Centre Wheel Scroll

Zoom In/Out



Elements of the Workpage Window

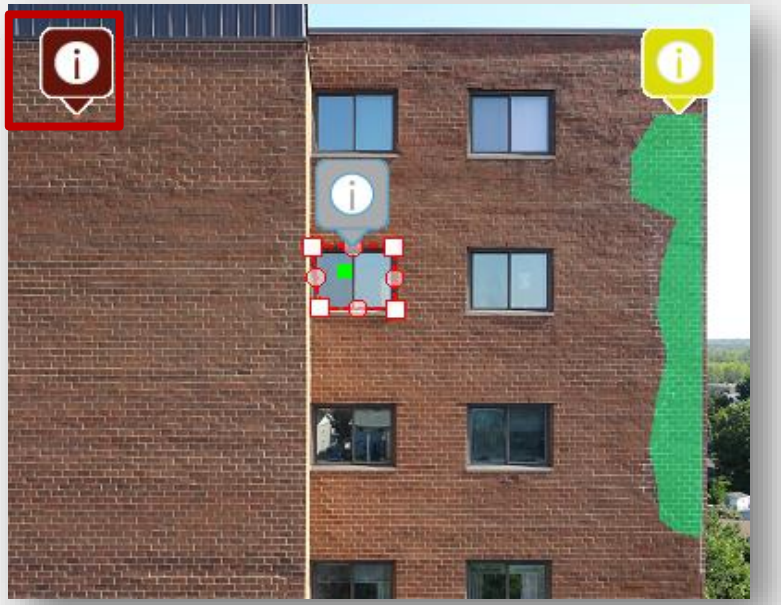
Focus Point: This represents the point clicked by the Select Tool in the 3D View and is symbolized by a green square.



Anomalies: These represent any anomalies found during the inspection and are displayed as a points, lines and polygons on the image. The color corresponds to the type of anomaly found. If these anomalies are included in other images, they will also be displayed by icons

Icon shows the position of another anomaly that was marked on a different picture. Qii Edge remembers the position in space of each anomaly and shows you that regardless of the photo you are looking at.

By clicking that Icon you display the photo the anomaly was marked on.



Smartpages

The Smartpages window contains small version of all images that include the focus point selected in the 3D View. This not all the images but ones that have been smart filtered to include the best images of the Workpage area. To see all the images you must use the map view.

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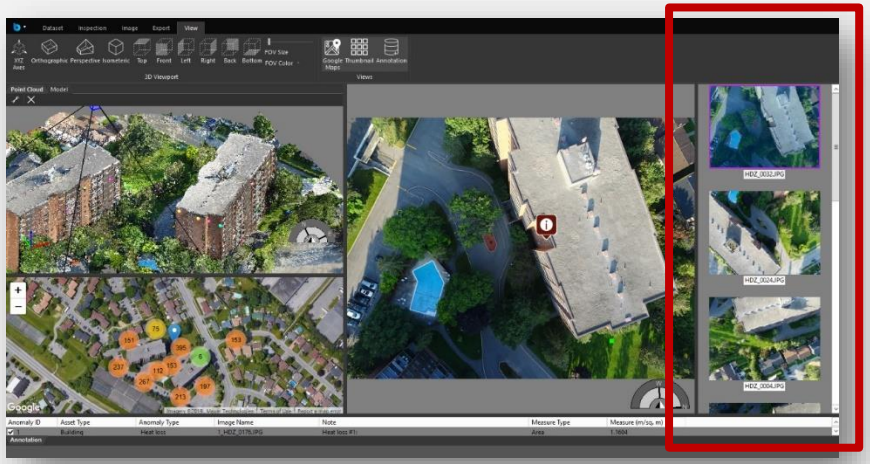
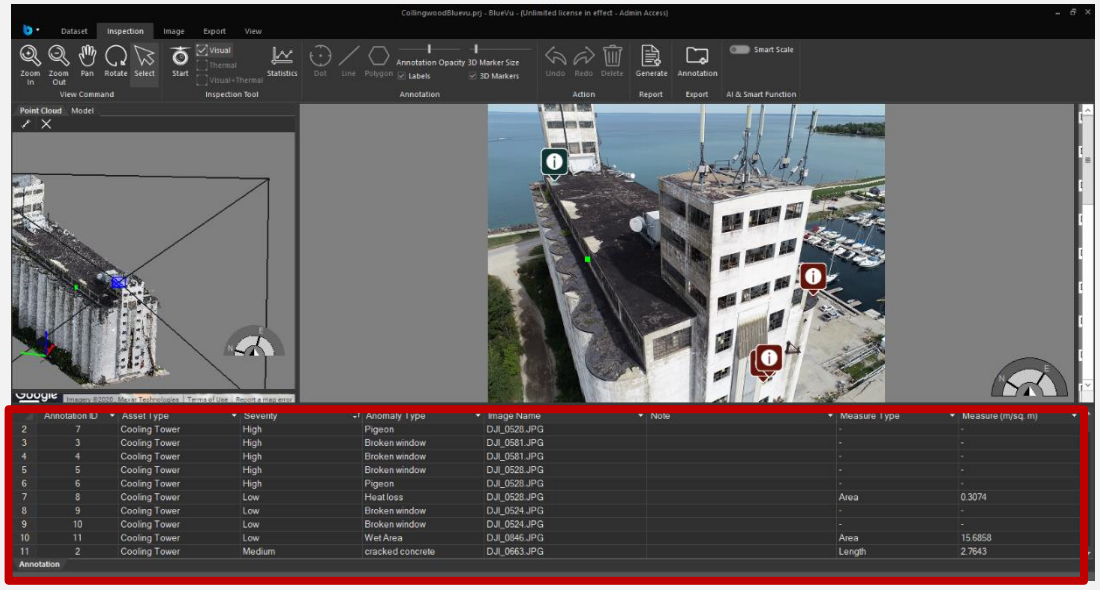


The image that is displayed in the image view is highlighted with a pink square. Images that have been annotated are flagged with an Icon in the thumbnail

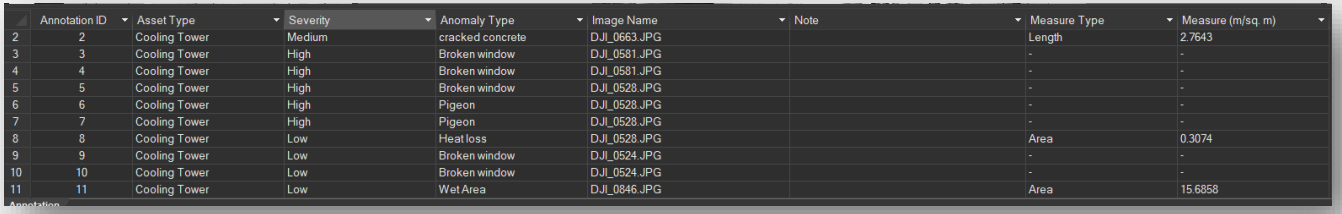
Report Pages

The report Pages contains a reference to any annotation and inspection objects created during an inspection.
It gives the ability to turn the objects on and off. You can select an anomaly by clicking on the desired line
This will load up the related image and anomaly outline in the main window.

NOTE: *The order the anomalies appear in the list is the order they will be printed in the report. You can change the order by sorting and or filtering the list.*



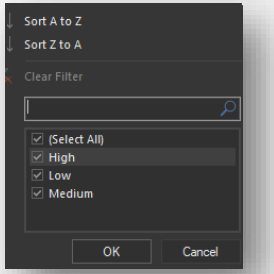
This table contains all information associated with the anomalies delineated during an inspection.
It includes information such as Facility Type, Feature Type, Notes, and Area and severity.
This menu can be sorted alphabetically in each field, or by severity high, medium, low.
Each field can be moved into different order. (grab the name and drag to new position)



	Annotation ID	Asset Type	Severity	Anomaly Type	Image Name	Note	Measure Type	Measure (m/sq. m)
2	2	Cooling Tower	Medium	cracked concrete	DJI_0663.JPG		Length	2.7643
3	3	Cooling Tower	High	Broken window	DJI_0581.JPG		-	-
4	4	Cooling Tower	High	Broken window	DJI_0581.JPG		-	-
5	5	Cooling Tower	High	Broken window	DJI_0528.JPG		-	-
6	6	Cooling Tower	High	Pigeon	DJI_0528.JPG		-	-
7	7	Cooling Tower	High	Pigeon	DJI_0528.JPG		-	-
8	8	Cooling Tower	Low	Heat loss	DJI_0528.JPG		Area	0.3074
9	9	Cooling Tower	Low	Broken window	DJI_0524.JPG		-	-
10	10	Cooling Tower	Low	Broken window	DJI_0524.JPG		-	-
11	11	Cooling Tower	Low	Wet Area	DJI_0846.JPG		Area	15.6858

(for reference only)
Depending on the resolution of the monitor the “Measure Area” may not be visible, you can it by dragging the “Note” box smaller, the Measure dialog should appear on right, you can then drag to any position order you like.
The “Measure Area” can be either in Metric or Imperial, switching by right clicking the name

It is also possible to remove types and severity of anomalies from the report using the filter dialog found on the small white down arrow.

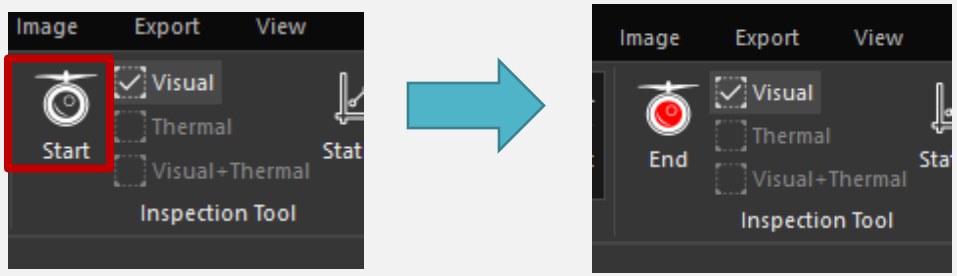


The order the anomalies appear in the report window will be the order they appear in the final report. You may wish to have the report ordered by severity or anomaly type.
You can even exclude anomalies through the filter dialog.

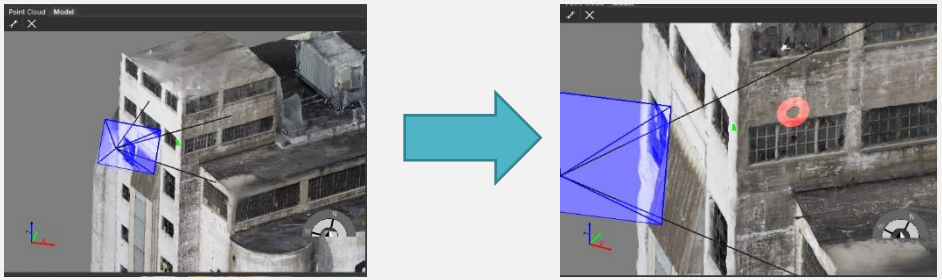
HOW TO CREATE AN INSPECTION **3D**

How to create an annotation

1. Click the start button



2. In the 3D Window select the area you wish to inspect. (or use the Map view)



3. In the Inspection window inspect the image, zoom in and pan to get closer.

4. In the toolbar select Dot Line or Polygon

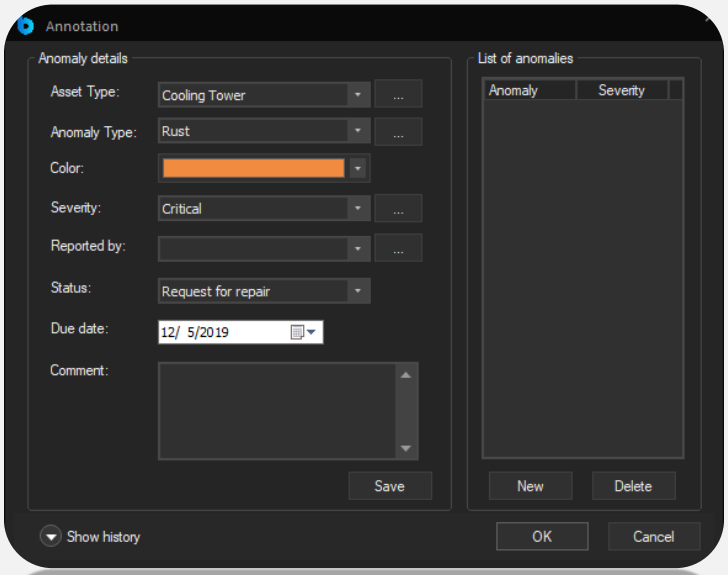
5. Draw around the area of concern (or use the Dot or Line) The red line will snap to close itself.

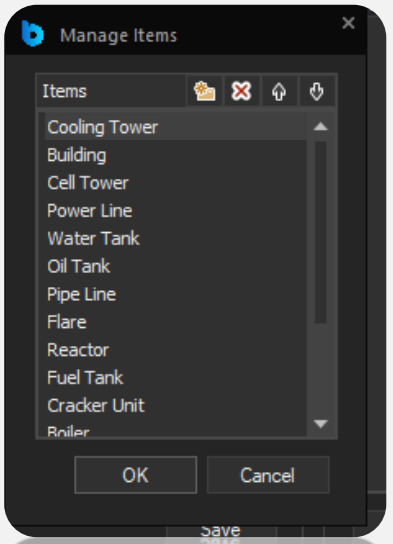
Annotation Menu

When the polygon is closed or the line complete this will bring up the Annotation Menu

1. Select the type of asset (if it is not listed you can add it to the zlist by clicking on the three dots to the right of the list. This brings up

the Mange Items Dialog you can then add to the list using the + Icon
You can move its position up the list with the arrow keys and delete
Assets from the list with the Delete X Icon)





2. Select the Colour you wish to assign to the Anomaly. This will
   Apply to future anomalies of the same type.

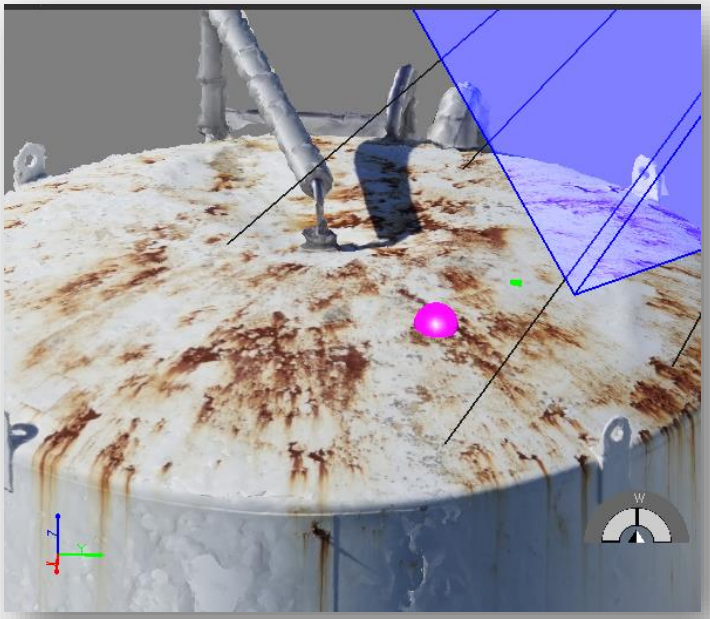
3. Select the Severity Level: Critical, High, Medium, Low, No Impact
4. Select reported By. Names can be added in the same way
   Assets were added. (Click on the three dots to the right) (optional)
5. Select Request for Repair, Repaired of Re Request for Repair, you can add your own fields to these defaults (optional)

6. Select a due date for Repair (optional)

7. Add any comments you wish to in the Comment Box, you can also Paste into this box.
8. **Click Save (do not click OK)**
9. If there is more than one type of anomaly at the same spot you can Add it by clicking New. This allows you to fill in the details of the new Anomaly using the same dialog box. For example Rust and Crack maybe in the same spot.
10. Once complete click the OK button.

The Anomaly is added to the photo
A marker is added to the annotation the colour reflects the severity level

A 3D marker is added to the model the colour reflects the Anomaly type

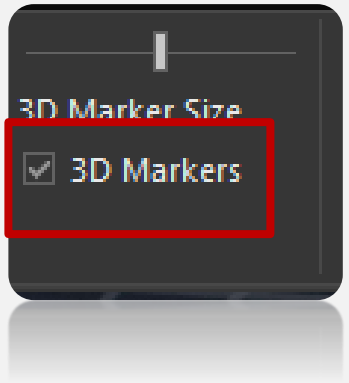


The Area is added to the Annotation list

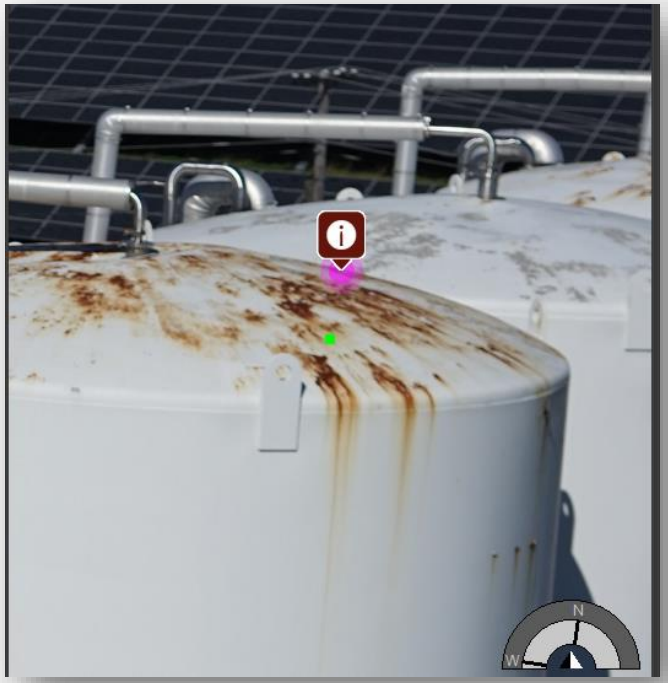
13	Cooling Tower	Rust	DSC01866.JPG	Rust #11:	-	-
14	Cooling Tower	Rust	DSC01866.JPG	Rust #12:	-	-
15	Oil Tank	Rust	DSC01866.JPG	Rust area	Area	0.0215

Note: The Marker will remain on the 3D model, unless you remove it be deselecting “3D Markers” in the

Inspection Ribbon. You may need to adjust the size of the 3D marker using the slider.

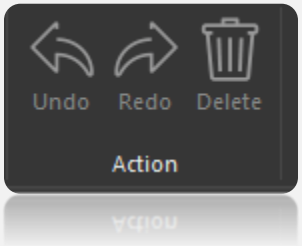


The Severity marker will also be visible in other 2D images. This is to ensure you don't remark an anomaly that has already been marked in that spot, useful when you are working on a different image and viewpoint.



Delete an Anomaly

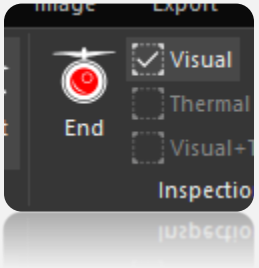
The following steps outline the procedure for deleting an anomaly.



1. Ensure an inspection session is enabled by clicking **Start** if not inspecting already.
2. Using the Select tool click on the sphere representing the anomaly in the 3D View to bring up the appropriate image in the Image View.
3. Click on the polygon, line, or point in the Image View to highlight it.
4. Click **Delete** in the Action section to remove the anomaly.
5. Continue adding anomalies/removing anomalies **OR** Click **Stop** to end the inspection
6. Undo and Redo are also options.

Ending/Saving the Inspection

When you are finished you r inspection you must click End this will end the inspection process and save your work.



HOW TO CREATE AN INSPECTION **2D**

The Process is the same as the 3D process with the following exceptions:

You must use the map view. The 3D view is disabled.

There are no measurements possible.

The numbers represent the number pf photos taken in that one area.

The colour represents the density of photos (yellow= dense, Green= more sparse)

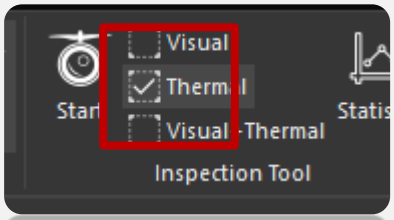
The selection menu comes up when you click on the green circle Here the photos in the area are organized by altitude. (higher/top to lower/bottom)

You can select the picture from the Box Green cameras are Thermal and Grey are regular photos.

THERMAL IMAGES

Qii Edge supports the use of thermal images in *.jpg format (non radiometric) you can have just thermal images displayed

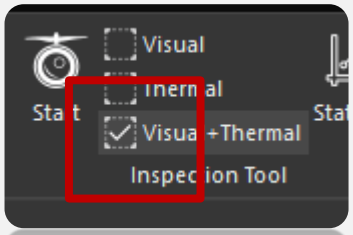
or a split screen with thermal and photos. Useful when you wish to compare the data for verification. You can switch between all the view by selecting the tick box.

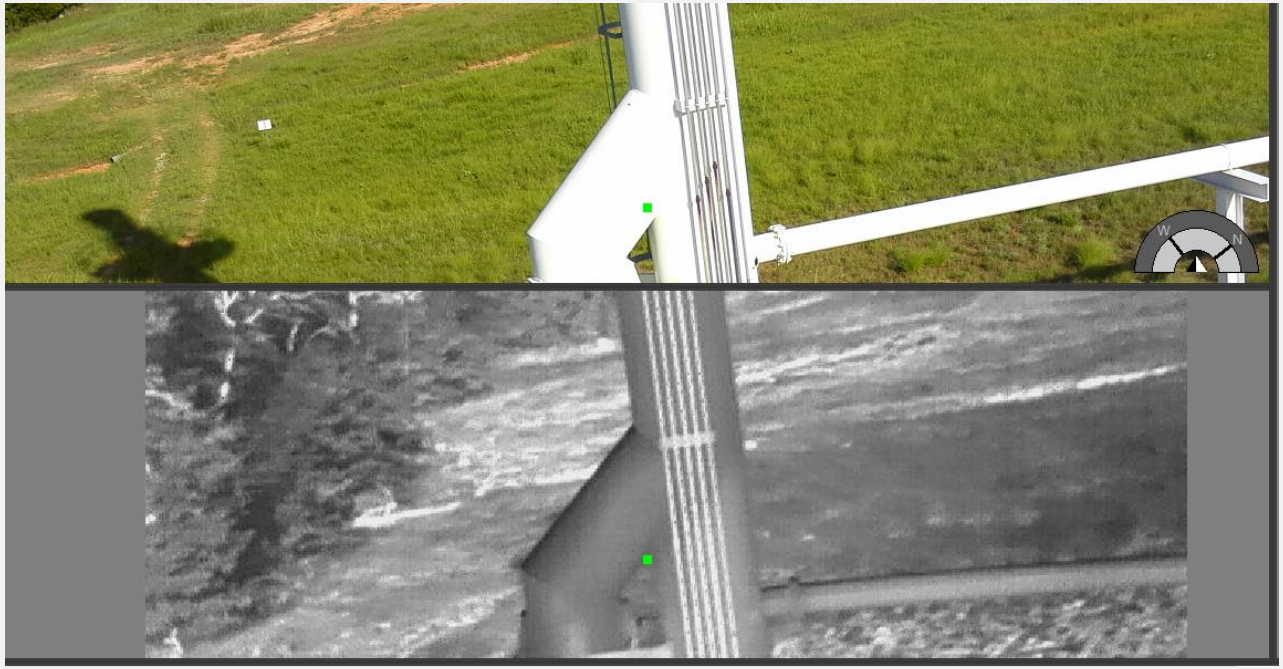


Dual view example

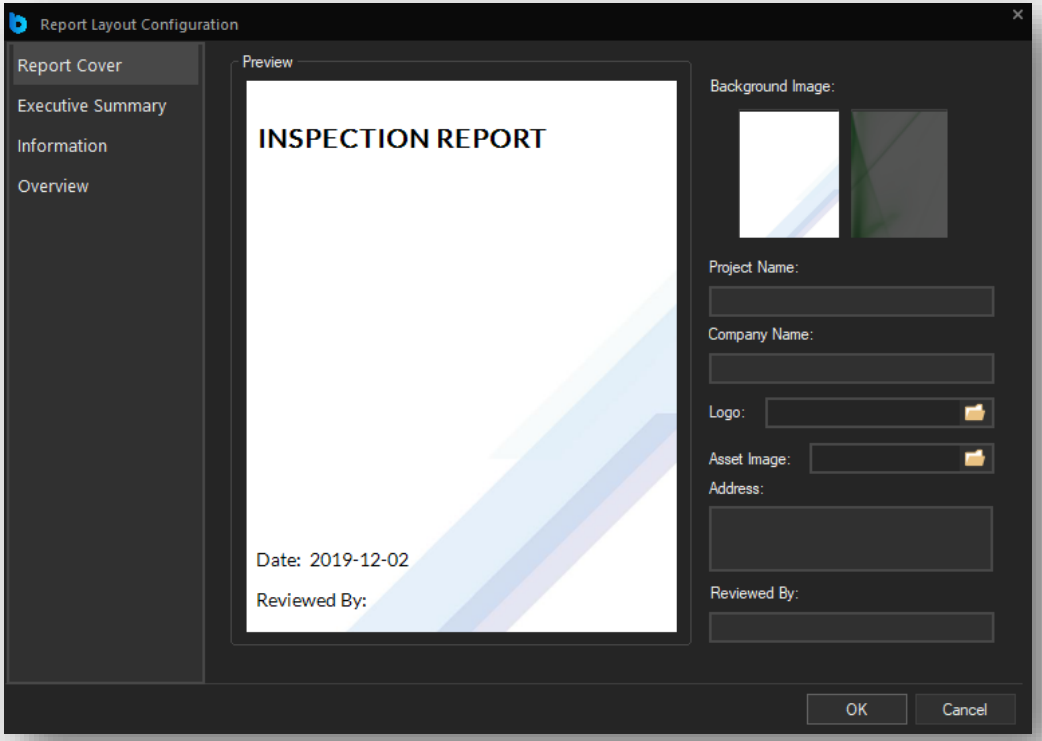
Note: the Window sizes are adjustable by dragging the middle bar to the size you wish.
Sizes of the images may seem different, this is because of the very different resolutions Between Thermal cameras and Visual cameras. By zooming in you can fill the viewing area with both images.

The Images try to match the same zoom and pan position. The accuracy of this is dependent on how the data was collected. The software does try to match the visual and Thermal as closely as possible, but this sometimes creates some unexpected results.





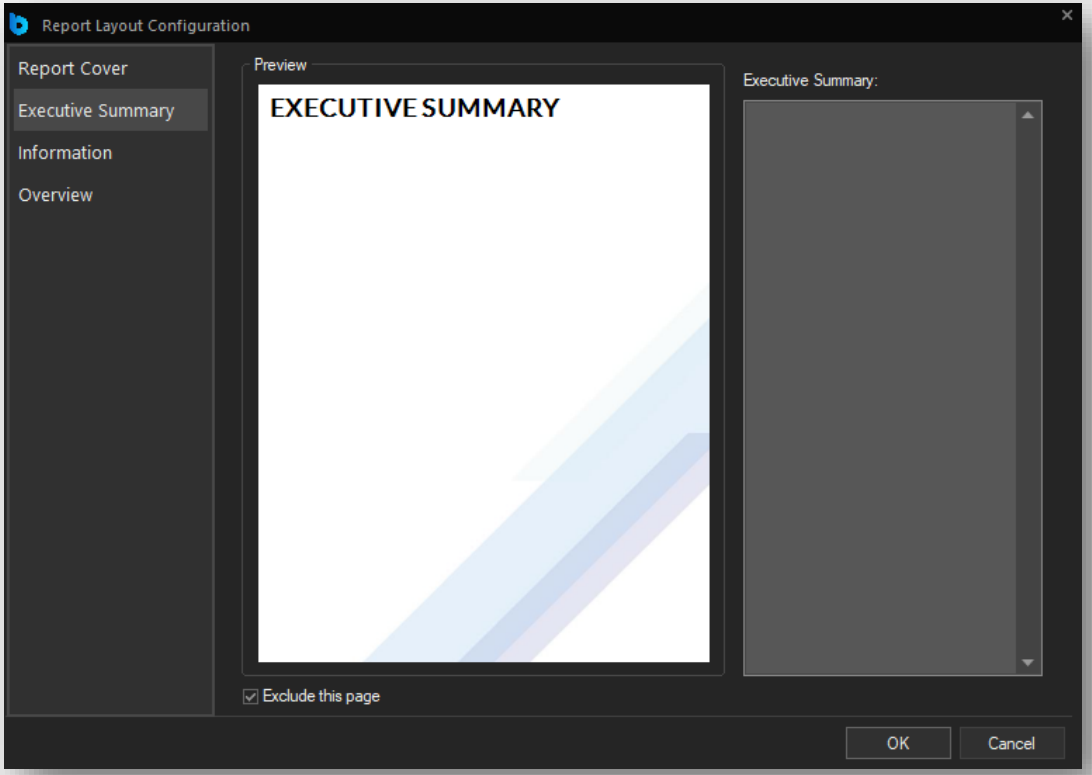
HOW TO CREATE A REPORT



How to create a report using the Report Layout Configuration

1. Select the Background Image
2. Fill in the information Boxes on the right hand side of the screen
3. Select a company logo in *.jpg format (optional)
4. Select a picture of the Asset in *.jpg format (optional but recommended)
5. Do NOT click ok you must now click on the list to the left (Executive Summary)

Executive summary

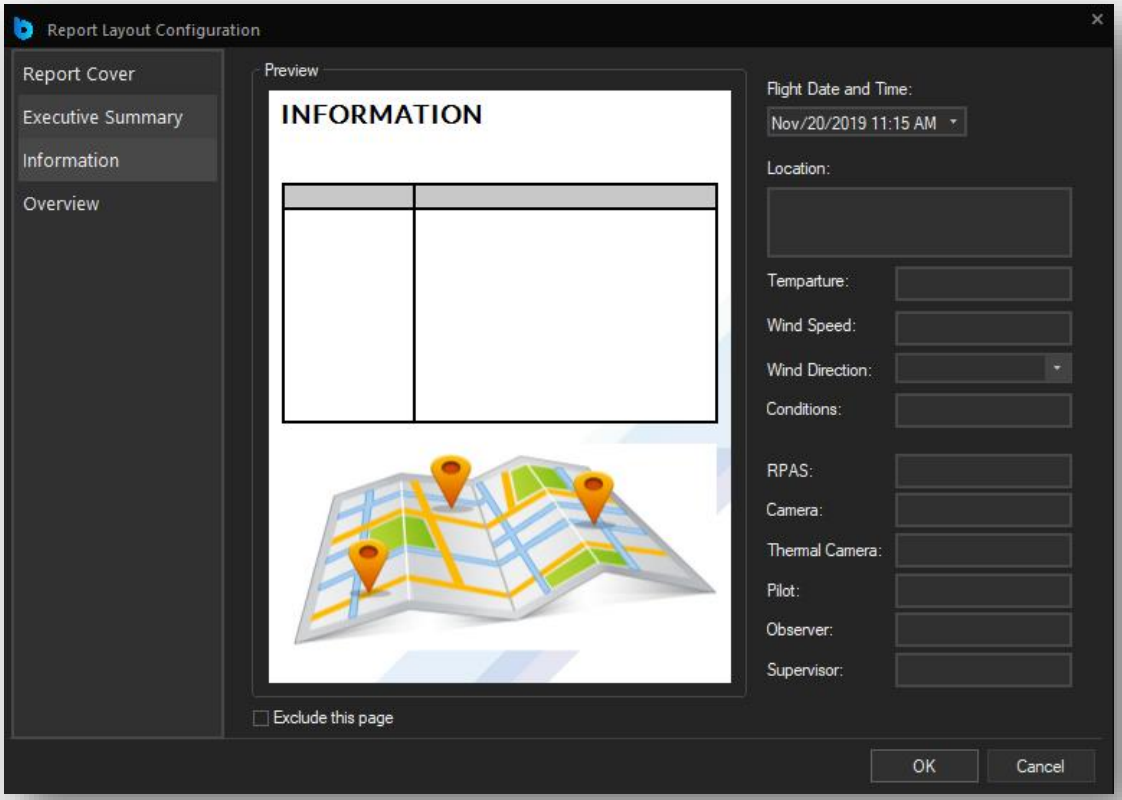


How to fill in Executive Summary

1. This page is optional. If you want to include this page in the report you must deselect "Exclude this Page " tick box
2. When deselected the box on the right can now be typed in. You can enter your text here
3. Alternatively you can copy and paste text directly into this box from your word processor.

Do NOT click OK, on the left side of the screen click *"Information"*

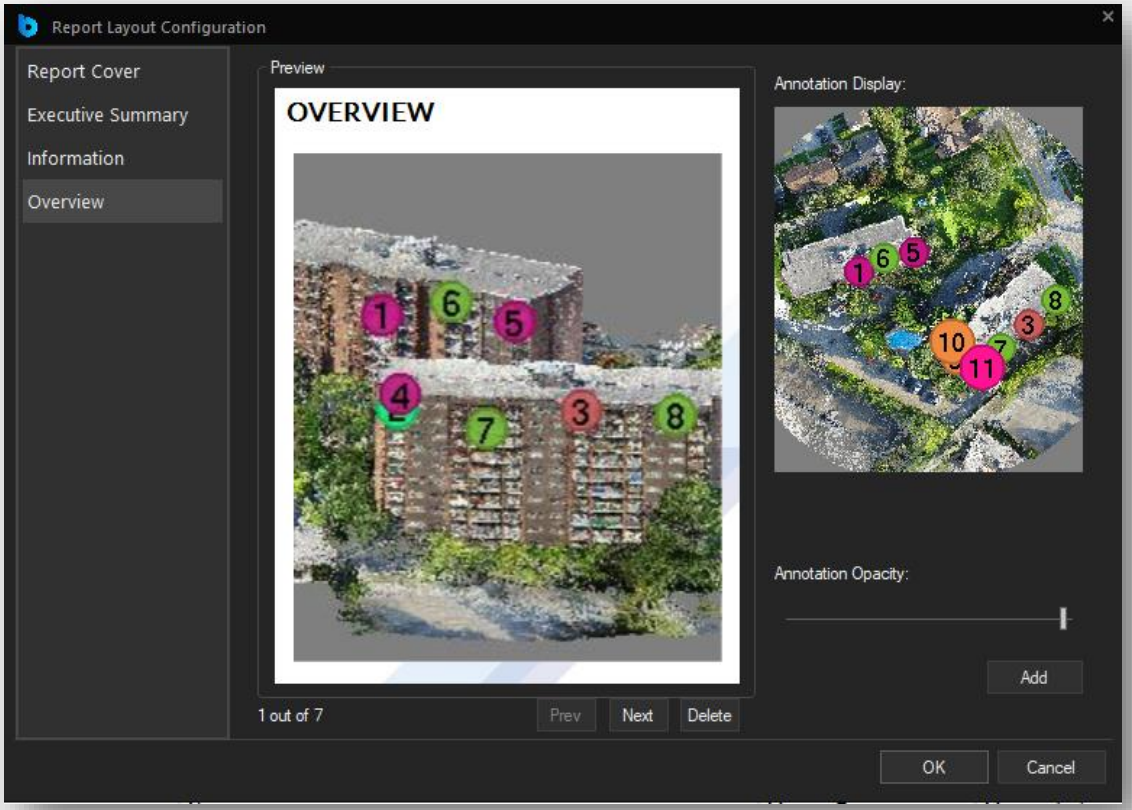
Information Page.



How to fill in the Information Page

1. This page is optional. It is set on by default, if you wish to exclude it click the “Exclude this page” box
2. On the right there are information boxes to be filled, these are optional
3. The Page in the report will show a map view of the flight with markers where the photos we taken, this is Autogenerated from the GPS meta data from each photo
   Next on the left hand side click *“Overview’*

Overview Page.



How to Create Overview Pages

The Overview page is to allow the Inspector to create Viewpoints that show where problem areas are found on the asset
You can create as many pages as you want with different views on each page.

1. On the right hand side is the Digital Twin it can be rotated and moved using the mouse.

2. Put the model in the position that shows the marked anomalies in the way you wish

3. Click the “Add” button
4. The Image is transferred to the main page.
5. You can move the model around to another position and hit Add again to create a new view
6. Continue in this manner until you have as many views as you wish.
   (We recommend no more than 3 or 4 as each Viewpoint will print out as a full page in the report)
7. You can review the viewpoints you have collected by using the “Prev” or “Next” button
8. If you wish to remove viewpoint you can select the viewpoint and click “Delete”
9. The Opacity of the marker is adjustable with the “Annotation Opacity” Slider

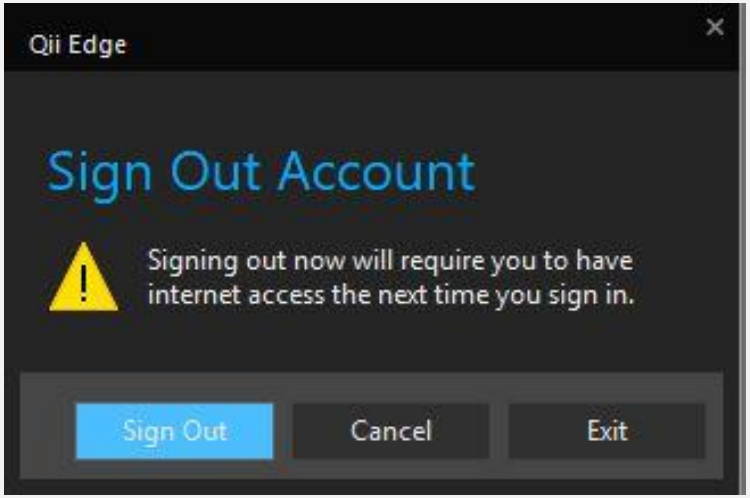
When complete you can click the “OK” button

The list of anomalies is printed in the order they were sorted in the Anomalies List window. If you need the most severe first please sort them in the list before generating the report.

If you have selected Report you will be presented with a location to save your Report PDF
If you selected “Preview Report” the report will be generated and loaded into your PDF viewer.
It will not be saved unless you manually save t through your PDF viewer.
Please note you must close your pdf viewer before creating another report from the same dataset.
Failure to do so my cause a crash.

EXITING QII EDGE

You can exit or sign out.



Sign Out of you plan to work on another computer. Exit if you plan to continue using the same computer.
Note: You cannot be signed in on more than one computer at a time, you must sign out if you intend to work on another computer.