X-TRACK

FLIGHT MANAGEMENT
SYSTEM SOFTWARE

snapVIEW
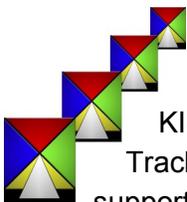
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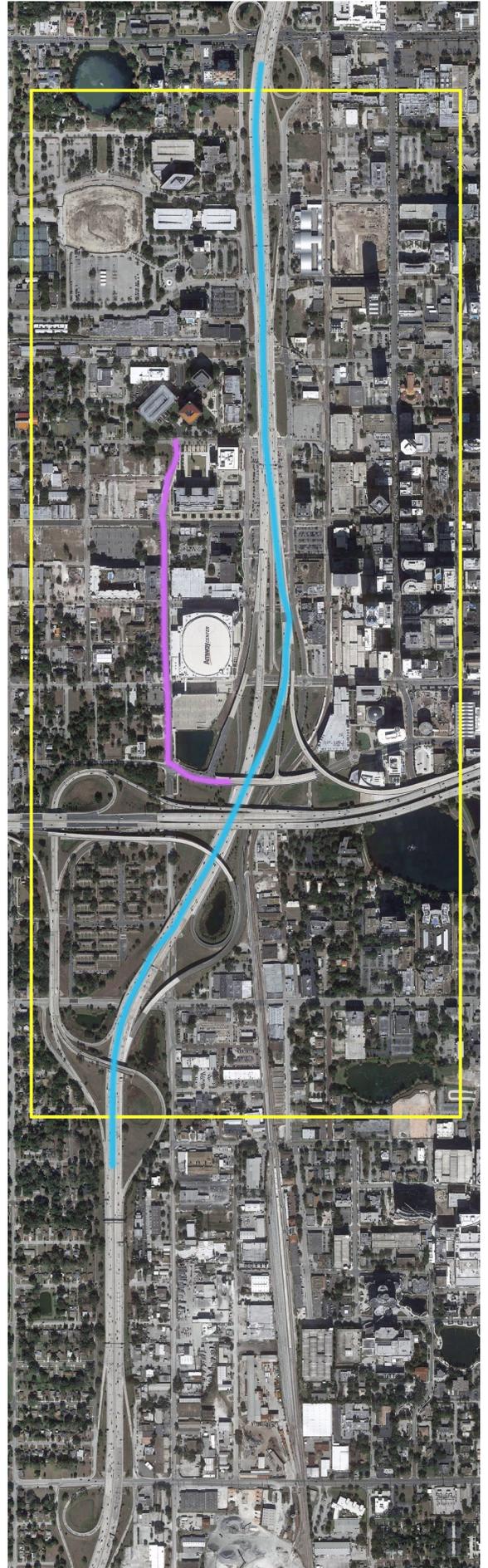
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Welcome

Welcome to the **Track'Air XTrack Flight Management System.** We are excited that you have chosen the Track'Air Flight Management System for the planning and acquisition needs of your Company.

We trust the **Track'Air Flight Management System** will be your key to increasing productivity and reducing operational costs in your aerial survey missions. If you are a long-standing customer, you will find many improvements and developments, evidence of our on-going efforts to remain in the forefront and your most responsive provider of solutions for the ever-evolving needs of today's ever changing acquisition needs.

This section of the manual details **snapVIEW**, the most recent module in the **X-Track Software Suite**. This module has been conceived to leverage new tools in internet technology, greatly simplifying initial flight planning in response to our customers' continually evolving needs. As you read through it, we hope you will discover a wealth of new tools, culled from today's internet availability and fine tuned to streamline your planning and acquisition workflow.

The celebration of 20 years of successful operation in 2014 highlights the quality and reliability of **Track'Air** products.

X-Track Software Design

The X-Track Software is built on a Microsoft Database (MDB) run by the Access Jet Database Engine. This structure preserves and manages all the data generated during the operation of the system. The MDB file allow for the creation of data entry forms, stored procedures, database queries, reports, security settings, etc… The **Tracker.mdb** file is the master file created for your Flight Management System. This master file is located in the TRACKER\MDB folder on the drive you installed the software.

All of the modules in the X-Track FMS access this database to manage your data. The system will not operate without this database so it is important you protect and backup this file. When each module is opened a backup of the current database is created in the Tracker\MDB\dbbackup folder. We encourage you to not rely just on this backup, but to backup this file regularly to an external source in case your database source is corrupted or the drive where the database is located becomes inoperable. This database can be moved to a completely new installation and all of your legacy data will remain intact.

It is possible and advisable to locate a Tracker.mdb master database on a central server so that several users can access it. This centralizes your flight data and allows for easy backup of all of your company's data.

Additionally the Tracker.mdb file is accessible to third party programming so the data that it contains can be queried for outside use in other programs or databases.

The data for each of your required flights can be easily transferred to and from the flight crew by means of email or thumb drive. After each flight **it is important** the flight crew export the flown data for the day from the onboard computer and return it to the office for inclusion in the master database.

System Requirements

Below are our recommendations and minimum system requirements and are meant only to provide general guidelines.

For the Office (laptop or desktop):

Recommended configuration:

Operating System:	Windows 7 or newer
Memory:	6 GB of RAM or more
Storage:	200MB free Hard drive space (a fresh \Tracker folder is 87MB)
Processor (CPU):	Intel Core I-3, AMD FX, or AMD A-series CPU

Absolute minimum configuration:

Operating System:	Windows XP; SP3 or newer (although the system will run on this Operating System, XP is generally considered too vulnerable and therefore not recommended)
Memory:	2 GB of RAM or more
Storage:	150MB free Hard drive space (a newly installed Tracker folder is 87MB)
Processor (CPU):	Intel Celeron, AMD FX, or AMD A-series CPU

For the Aircraft:

Camera/Sensor Operator : We recommend using our **Surf'Air Sensor Operator Tablet** based on our Ruggedized Microsoft Surface Pro 2 as the main platform for the sensor operator. This system is designed specifically for the Nextrack 2 and is well protected in flight.

Pilot: For the pilot display you may use our Lead'Air 6" display or one of the many mobile options that are now available. The selection of a display for the Pilot is subjective so we have provided possibilities that should satisfy most pilots' requirements.

X-Track Software Installation

The X-Track Software installs very simply as it is delivered as an executable file. First extract the installation file (TRACKER32.EXE) from the zip file you have been provided. FOR THE NEXT STEPS YOU SHOULD BE AN ADMINISTRATOR ON YOUR COMPUTER. You will need to know your password as the zip file is protected. We suggest you do this in the download or TEMP folder. **We do not advise installing the software from the desktop.**

To begin, right click on the tracker32.exe file and select run as administrator. You might get a security warning but just select "run" and continue.

You may or may not get another user account message about unknown publisher but just select "Yes" and continue.

Now you will be asked to enter your password.   Then select the drive where you wish to install the software.
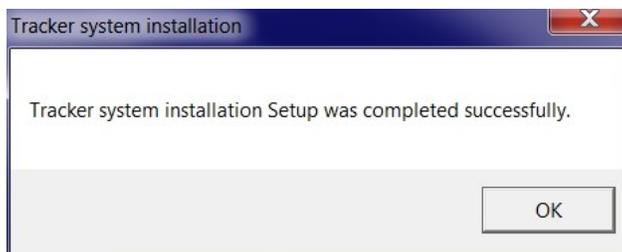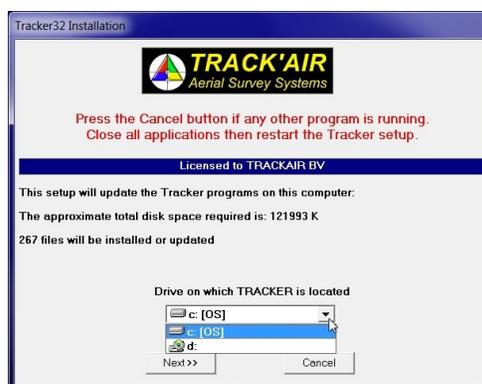
You will see this message once the install is complete!

Not installing Properly? Check our FAQ page for additional solutions for Win 7 or Win 8.

Quick Start

ABOUT snapVIEW

snapVIEW is the powerful, new program module from Lead'Air, allowing you to work faster than ever before by capturing your flight planning data directly from the user-friendly, internet mapping services you already use daily - Google, Google Earth, BING, TerraServer. The image data captured directly from these map services will be imported precisely into your flight plan, while the map image is saved as a background reference throughout the entire planning process.

In creating this tool, we have become convinced snapVIEW will quickly become the most up to date, and the preferred starting point for project and flight planning for most clients and projects.

ABOUT THIS MANUAL

This manual covers the installation and detailed use of the **snapVIEW** module of Lead'AIR's TRACKER software program for aerial acquisition. The manual is limited to a discussion of the software, and no discussion of hardware, sensors or general acquisition topics will be discussed here.

This manual is intended for use by Track'Air users, and offers both a quick-start path to get up and running with your equipment package and more detailed investigation into the multiple options available to customize your installation and fine-tune your workflow. Further information may be found on line, using Lead'Air's FAQ and support resources.

USING THIS MANUAL

This manual opens with a step-by-step tutorial, using standard options and features.

This "Quick-Start" guide is intended to get you up and running in the shortest time, and as it uses the most standard configuration options, it will be sufficient for many users without further exploration of the multiple options and features. We do encourage users, however, to take the time to explore the options and observe their behavior, as one of the strengths of the Track'Air program is its customizable design, and you may find a series of options allowing you to streamline your throughput, saving time and delivering the highest quality in the results you present to your customers.

Quick-Start: Using Bing Maps in snapVIEW
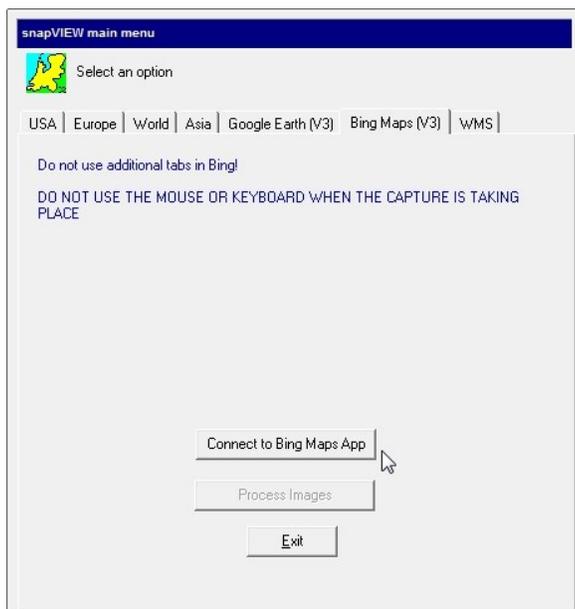
Open snapVIEW

Select Bing Maps(V3) tab

Select "Connect to Bing Maps App"

NOTE : You MUST allow BING to use the clipboard. Click "ALLOW".

Once in Bing select Road or Aerial view, locate your area of interest and center it in your screen.

You can use "Go to address" at bottom center to specify a location on which to center your image.

Toggle labels off if you do not want them to appear in your image

In the toolbar on the left you may select an overlap for capture (-30 to +30%). At the top center of the page select the number of tiles you wish to create. The higher the number, the higher the resolution of your image.

Click the capture button directly below.

DO NOT TOUCH YOUR COMPUTER OR MOUSE DURING THE CAPTURE PROCESS.

Quick-Start: Using Bing Maps in snapVIEW
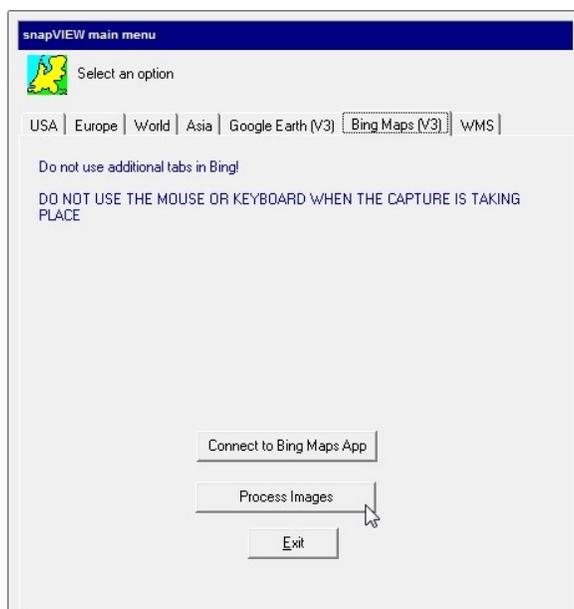
After image capture, use the "ALT-TAB" keyboard command to switch back to the snapVIEW application.

Select "Process Images" to allow snapVIEW to mosaic the images and open the toolbox.

At this point you can select one of the image save functions and save your image. Either drag the rectangle box from upper left to lower right to define a selection, or save the entire image with the Save to Extents function.

Now you have a georeferenced .tif file that you can utilize for preparing additional data for your flight plan. This image is also available for external use in the c:\tracker\raster folder in the specific project folder.

With an image saved, using BING Maps, go to page 14 to begin exploring the toolbars that will allow you to define an area or path that will be used to create your flight plan. We will start with an overview of the toolbars in the snapVIEW application, a subset of which is common to all of the TRACKER applications.

DATABASE BACKUP.

A this stage in image capture you may receive a pop-up window asking if you want to make a backup of the database., and asking if you wish to make database backups once daily. You may click either YES or NO at this stage to continue. To learn more about this important feature, and setting database backup options, please refer to the section on "Database Management" in the snapPLAN manual.

Quick-Start: Using Google Earth in snapVIEW

Open snapVIEW

Select Google Earth (V3) tab

IMPORTANT NOTE ON GOOGLE EARTH VERSIONS

Google Earth versions are changed by Google at regular intervals, and users and OEM developers are not always consulted about the effects of program changes resulting from this product evolution.

snapVIEW has been affected by some of these changes, and as a result not all versions of Google Earth are compatible. If you are experiencing difficulties in image capture from Google Earth, please consult the Lead'Air FAQ page for version compatibility.

First open "Configuration and Settings" . These setting are **necessary to set but are saved as defaults so it is** not necessary to check them each time you open
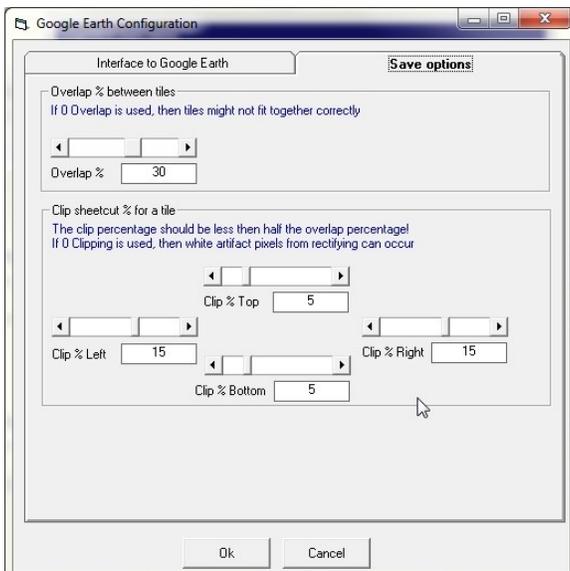
Select the "Save options" tab and set the overlaps that you wish to have for the image captures. The setting at the right will be a good starting point but you can customize them.

Quick-Start: Using Google Earth in snapVIEW
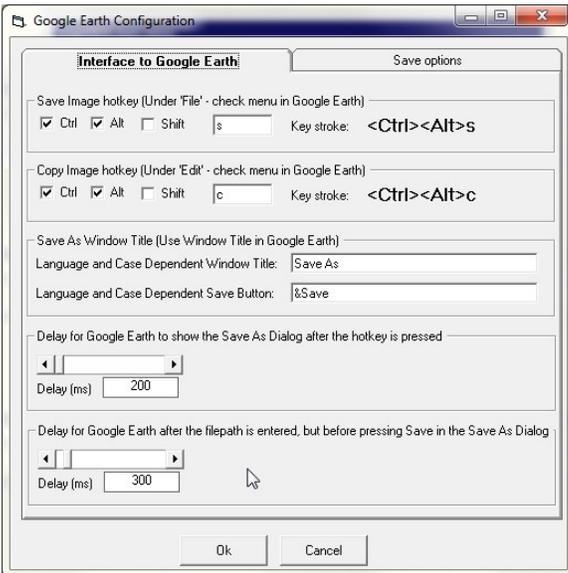
On the "Interface to Google Earth" tab the two Delay options are settable in case you have a need to delay the collection of each image. Slower computers may require these to be lengthened.

When complete click OK.

Select: 1) Start/Show Google Earth

After Google Earth opens center your area of interest on the screen

Turn on/off layers as necessary for your map

Alt-Tab back to snapVIEW and select: 2) Capture selected view in Google Earth

Quick-Start: Using Google Earth in snapVIEW
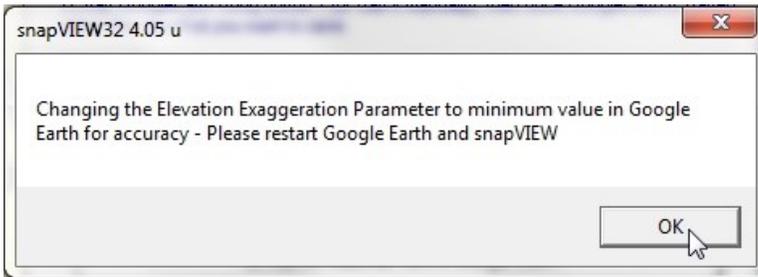
If this message pops up it is recognizing that the settings in Google Earth

<u>Important! Disable Terrain Elevation!</u>

Go to Google Earth—Tools\Options. On the 3D View tab under terrain quality, <u>uncheck</u> this option and set the elevation exaggeration to 0.01. Apply and OK.
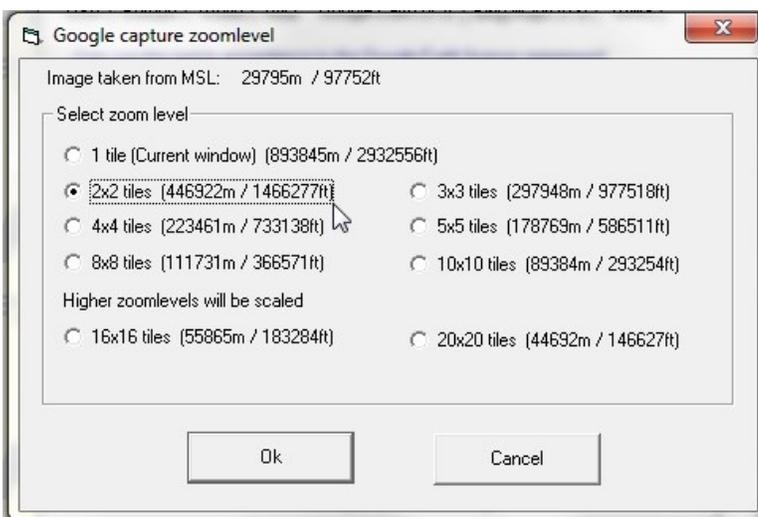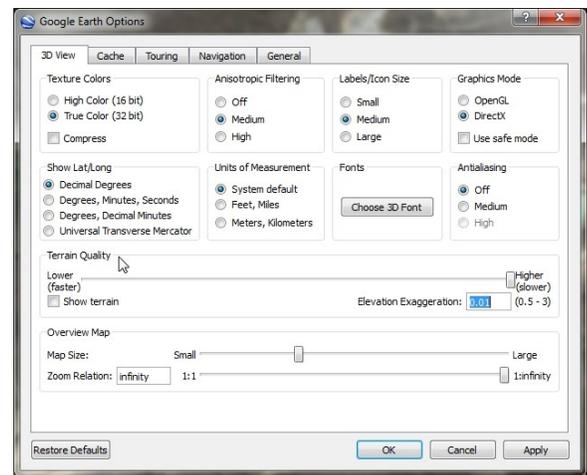
Once that is set the Google capture zoomlevel is visible and you can select the number of tiles you want to collect. The more tiles you select the higher the resolution of imagery you will have. When you select "OK" it will begin <u>c</u>apturing the imagery you requested—DO NOT TOUCH YOUR COMPUTER OR MOUSE DURING THIS PROCESS.

Quick-Start: Using Google Earth in snapVIEW
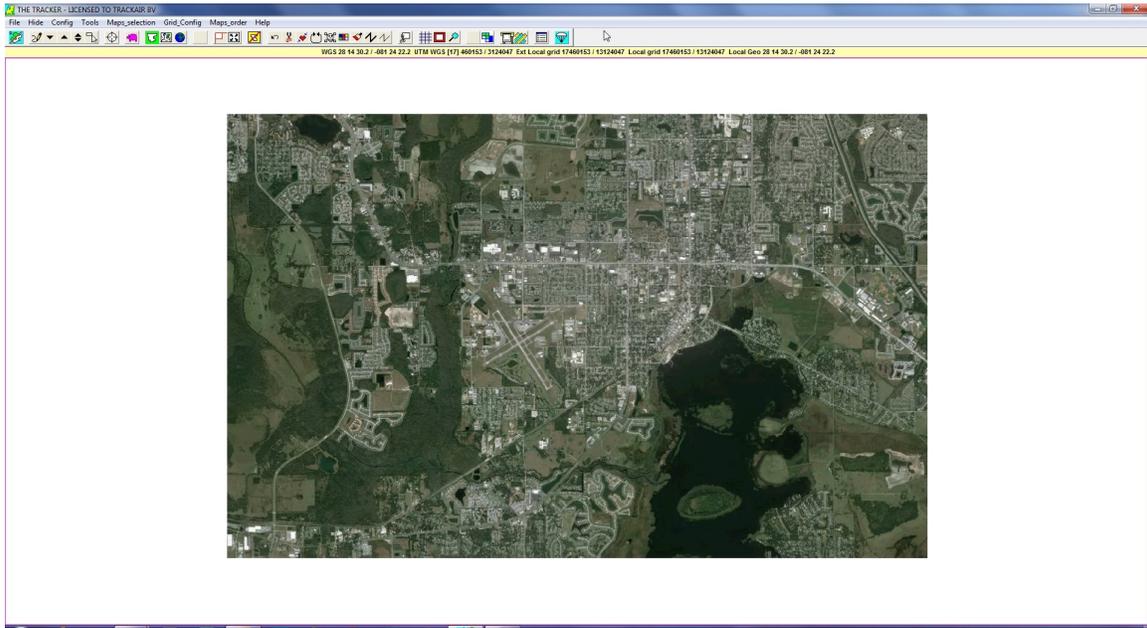
Once the capture is complete snapVIEW will focus to the front and you will see the screen above with your image area.

After image capture, use the "ALT-TAB" keyboard command to switch back to the snapVIEW application.

Select "Process Images" to allow snapVIEW to mosaic the images and open the toolbox.

 At this point you can select one of the image save functions and save your image. Either drag the rectangle box from upper left to lower right to define a selection, or save the entire image with the Save to Extents function.

Now you have a georeferenced .tif file that you can utilize for preparing additional data for your flight plan. This image is also available for external use in the c:\tracker\raster folder in the specific project folder.

DATABASE BACKUP:

A this stage in image capture you may receive a pop-up window asking if you want to make a backup of the database., and asking if you wish to make database backups once daily. You may click either YES or NO at this stage to continue. To learn more about this important feature, and setting backup options, please refer to the section on "Database Management" in the snapPLAN manual.

With an image saved, using GOOGLE Earth, it is time to explore the editing tools that will allow you to define an area or path that will be used to create your flight plan. We will start with an overview of the editing tools in the snapVIEW application, a subset of which is common to all of the TRACKER applications.

Quick Start : Editing Tools

Editing Tools Common to All Tracker Applications:
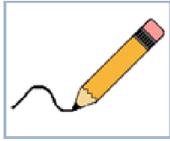
REFRESH:

Click to re-draw the screen to update or remove deleted items

ZOOM IN: Click to increase scale. A beep and no further increase will indicate zoom limit has been reached. This is dependent on the original size of the area selected.

ZOOM OUT : Click to decrease scale. A beep and no further increase will indicate zoom limit has been reached. This is dependent on the original size of the area selected.
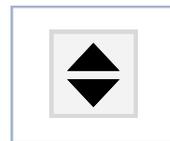
RESTORE : Click to restore the original zoom factor. This will zoom you to the original extents of the flight plan or screen.

ZOOM SELECTION : Draw a rectangle around a selected area to zoom to full screen. Rectangle **MUST** be drawn from the upper left corner to the lower right corner.

OPEN NEW PROJECT :

Click to return to the project selection dialog box.

SAVE :

Click to save your work

EXIT :

Click to quit the application

Editing Tools Used in snapVIEW:

SHOW / HIDE RASTER: Click to display or hide the raster image to view your work with or without the image.

GO BACK TO LAST DRAWN POINT :

Click to center display on last point drawn
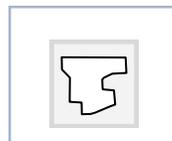
TOGGLE AREA LIMITS DRAWING MODE : In this mode you can **ONLY** create a polygon to be used as an AREA in planning a project.

TOGGLE BACKGROUND DRAWING MODE : In this mode you can create various lines in various colors to be used in planning a project.

SHOW DRAWING OVERVIEW : Click to hide the raster image and zoom and center the currently drawn data.
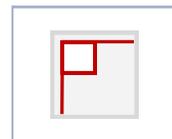
SELECT RASTER PROFILE : Click and drag from upper left to lower right to select an area from the raster image.
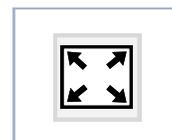
SAVE EXTENT :

Click to save the entire visible extent of the raster image.

SAVE COMPANION RASTER BACKGROUND :

Click to save the associated raster image with the profile.

Quick Start : Editing Tools

Editing Tools Used in snapVIEW (continued) :

UNDO :

Click to go back one step

TOGGLE CUT MODE : Click to turn "cut" command on and off

LINK SEGMENTS :

Click to join two drawn segments into one profile
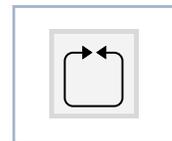
MOVE SEGMENT NODE : Click and hold to nudge drawn segment nodes into a desired position

TOGGLE ERASE MODE :

Click to turn on and off erase (delete) command
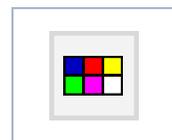
SELECT NEW COLOR : Brings up a color palette to select a new drawing color to improve visibility of your work

CHANGE SEGMENT COLOR :

Toggle on and click on a line to repaint entire segment with selected color

THICKER LINES :

Select lines to thicken for better visibility
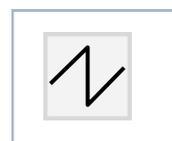
THINNER LINES :

Select lines to reduce thickness

Quick Start : Editing Tools

Editing Tools Used in snapVIEW (continued) :
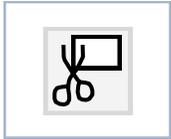
CLIPPING AREA: Click to draw a polygonal clipping area within the work area. Rectangle **MUST** be drawn from the upper left corner to the lower right corner.
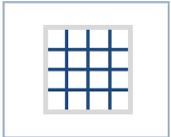
GRID: Click to show / hide gridlines. The Grid_Configuration tab allows the adjustment of the grid parameters.
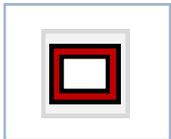
SHOW MAP EDGES : Click to show line that defines the edge of the image

MAGNIFIER : Opens a new window with a magnified view.
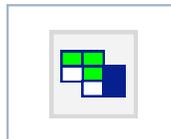
RASTER MAPS : To open raster maps saved in DXF / BMP/ TIF. Opens a dialog box for parameters to import these raster images.

TRANSFER TO snapPLOT :

Opens saved information in snapPLOT to prepare information for ATC or client.

TRANSFER TO snapPLAN :

Opens your saved work directly in snapPLAN to continue with flight planning.
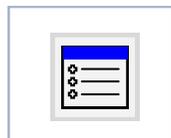
RETURN TO MAIN MENU :

Returns to the main menu.

EXIT :

Click to quit the application

Quick Start : Creating Areas and Background Lines

With an image saved from Bing Maps or Google Earth, and an introduction to the tools and icons in snapVIEW, we will proceed with creating an area, or background line to develop a flight plan.

CREATING AN AREA
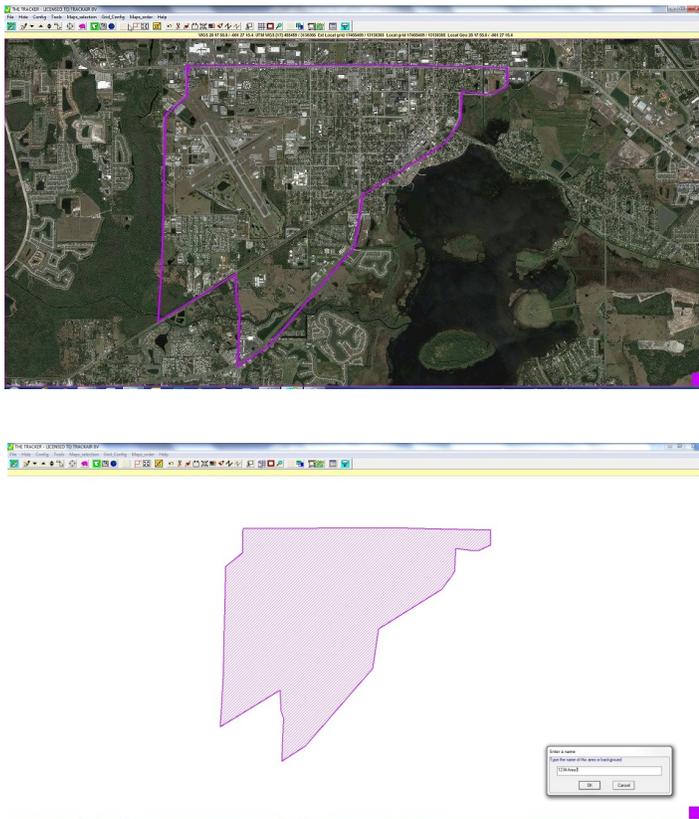
Using the "Area Limits" drawing mode (the default selection for the program) you can create a polygon of your project. The color of the line can also be selected by either using the "Select New Color" button or the "Pick a Color" button in the lower right corner of the screen. This button also displays the current color selected. Begin drawing a single polygon of the area you require by left clicking and digitizing, one line segment at a time, around your area. After you get back to the beginning of your line just right click to end it. If the line is a little difficult to see you can use the thicker lines tool to thicken it. To close the line to a single polygon use the "Link Segment" button and click twice on the line. You will be asked if you want to close the line on itself : Click "yes" to complete the operation. Now save the area to the database., by clicking on the Save button (Pink Piggy Bank) and you will be asked if you want to save a companion raster background. If you have already saved your image it is not necessary so just click "no". If you haven't saved it you can click "yes" and it will save your image, using the settings in the pull-down menu, "CONFIG" / then "Configure snapVIEW". This menu has a slider for the settable option to capture imagery outside the boundary of your area from 0 to 20 km. This remains a default once you change it. You may now exit out of snapVIEW and proceed to SnapPlan to create your flight plan(s).
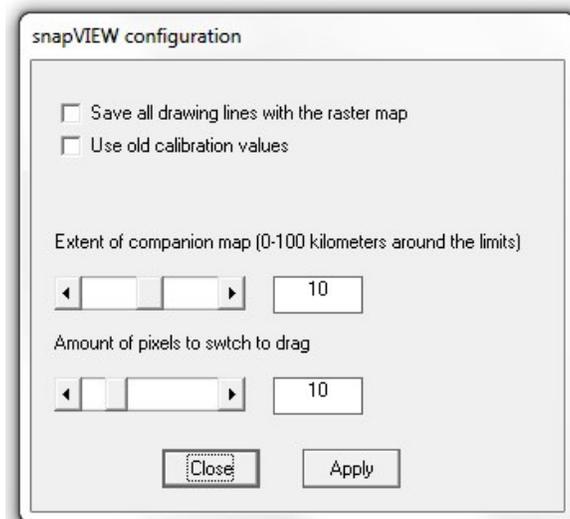
For information on naming conventions, please refer to the following page.

Quick Start : Creating Areas and Background Lines

With an image saved from Bing Maps or Google Earth, and an introduction to the tools and icons in snapVIEW, we will proceed with creating an area, or background line to develop a flight plan.

CREATING A BACKGROUND LINE
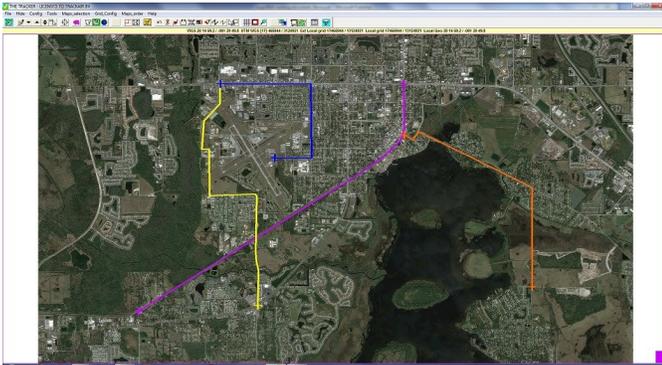
With your image saved, it is possible in snapVIEW to create a background drawing along centerlines of "corridors" (roads, power lines, rivers, etc…) in your project. Toggling to the "Background Drawing Mode" you can create single lines in different colors to be used for your project. The line color may be selected by either using the "Select New Color" button or the "Pick a Color" button in the lower right corner of the screen. This button also displays the current color selected. Begin drawing a single line of the corridor you require by left clicking and digitizing along the road, powerline, river, etc... After you get to the end of your line just right click to end it. If the line is difficult to see against the background, you can use the thicker lines tool to thicken it. If you want to distinguish corridors by color you can select a new line color and draw the next line, and so on… Save the background lines to the database by clicking on the Save button.
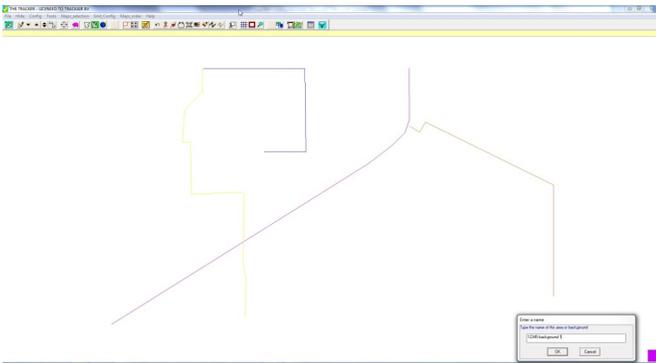
(Pink Piggy Bank). You may now exit out of snapVIEW and proceed to SnapPlan to create your flight plan(s).

A word about naming conventions : The data for all of the projects is saved in the tracker.mdb database so it is essential **NOT** to duplicate names of backgrounds or areas. It is worth investing some thought at this stage into naming conventions, and developing a system that will make all companion components of a project easy to find and identify, while maintaining uniqueness of identifiers throughout the database.

As a simple guideline, if you have job numbers it works well to use the job number in front of the name of the area or background when saving, e.g. **12345 Area 1**. This way you can have an "Area 1" in every project if you so desire. If others are going to be sharing the files or need to follow in the workflow, it may be worthwhile to use more descriptive names, perhaps "Northern Lake Area" as opposed to simply "Area 1". Numerical dates are another method of further refining identifiers, allowing other users to easily identify the most recent versions of projects. June 1st, 2015 may be identified as 150601.

Quick Start : Image Editing

Color enhancement

Selected area

Select a current map (if applicable)

Choose rectangle or polygon if you wish to define a specific area on which the processing should act, then press the define button to draw the area or the edit button to modify it.

◉ Entire map   ○ Rectangle   ○ Polygon

○ Use current area limits (active color)

Define | Edit | Hide

Enhancement | Effects | Color | Record

Record and replay

☐ Record all image processing actions

Replay to selected map | Replay to all maps

Save current recording | Reset all

Load/delete a saved record

Apply last action to all maps

Undo Last | Reset Image

Close

snapVIEW contains a basic suite of image editing tools which you can use to enhance or modify the visual aspects of your raster images to enhance readability and presentation.

You will find the toolbar for this feature under the TOOLS dropdown menu : Raster Image Processing.

It is important to understand that if you have created a tiled image, using a mosaic of 2x2 or greater, in order to enhance resolution, snapVIEW's image editor will treat the individual panels as separate images, only modifying the panel that is selected.

For this reason, it is useful to click the "RECORD" tab, and select "Record all image processing actions" before performing any actual image enhancements, as this will allow you, once your editing work is complete on one panel, to copy the enhancement work precisely to all the other panels, creating a uniform image.

If your raster image is composed of only one image, there is no need to use RECORD.

Returning to the Enhancement, Effects and Color tabs, you will find a series of operations, including color select and replacement, brightness, contrast and gamma, which are essentially self-explanatory. Note that it is possible to select an entire image for processing, or only a selection within an image, either a rectangle or drawn polygon.

Return to the "RECORD" page, and if you have made changes to an image you wish to apply to the entire mosaic , click the option, "Replay to all maps".

This concludes our QUICKSTART approach to snapVIEW, in which we have taken you from the most often used and convenient methods of image capture, through to the point where you saved your images and line work to the database to re-open in snapPLAN for detailed flight planning.

In the following pages, we will be touching on some of the other options available in snapVIEW, including initial image importing techniques, some of which may be used in specific countries or localities. We will also touch more briefly on most of the other options available in the snapVIEW menus.

snapVIEW : Main Menu Alternatives

We have discussed in detail the processes of acquiring map imagery from Bing Maps and Google Earth, but there are other methods of bringing imagery into snapVIEW to begin planning. Many of these are country or locality specific, and may be of importance to you, depending on the standards and practices in use in the region where you will be planning. We will list these options here, with basic technical parameters they encompass. Please contact Lead'Air for support if you need more information about these options, or if you require options not present on the opening page of snapVIEW.
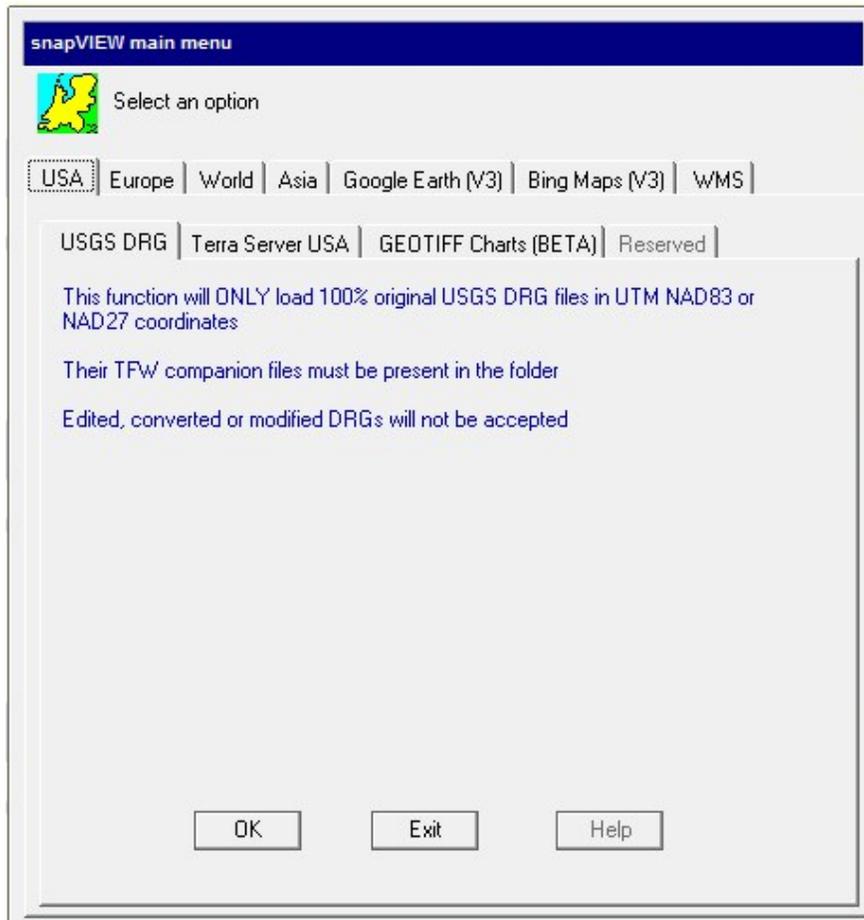
snapVIEW opens to the USA option, with the USGS DRG tab selected. As with the other options, a blue, text description indicated which file types and standards may be imported using this option; in this case, only USGS DRG files in UTM NAD83 or NAD27 coordinates. The USA tab has other options, including Terra Server and GEOTIFF charts. Users will recognize TerraServer as an obsolete image base, no longer maintained, however as many companies developed workflows using Terraserver data the images have been stored and are available on the Lead'Air website for use in planning. Clicking the Terraserver tab will bring up the Raster Toolbox, from which this imagery may be downloaded from Lead'Air. Please see the FAQ page on the Lead'Air website for more complete instructions : http://trackair.com/index.php/what-happened-to-the-terraserver/

The USA GEOTIFF tab contains a link to the FAA website, where images of georeferenced aviation sectional and Terminal Area Charts may be accessed.

snapVIEW : Main Menu Alternative (EUROPE)

The EUROPE tab of the main Menu contains the following options :

Switzerland : Swiss PK series topographic maps

Germany : TK maps in TIF or JPG, with TFW/JGW world file

Netherlands : RD maps in TIF or JPG, with TFW/JGW world files

UK : Standard OS topographic maps with TFW world file

France : Lambert 2 Extended maps in TIF or JPG with TFW/JGW world file

Belgium : BD72 Lambert maps with TFW/JGW world file

Austria : Standard KM50-R GK projection maps with TFW world file

Sweden : Standard SWEREF99_TM maps with TFW world file

Finland : Not yet implemented
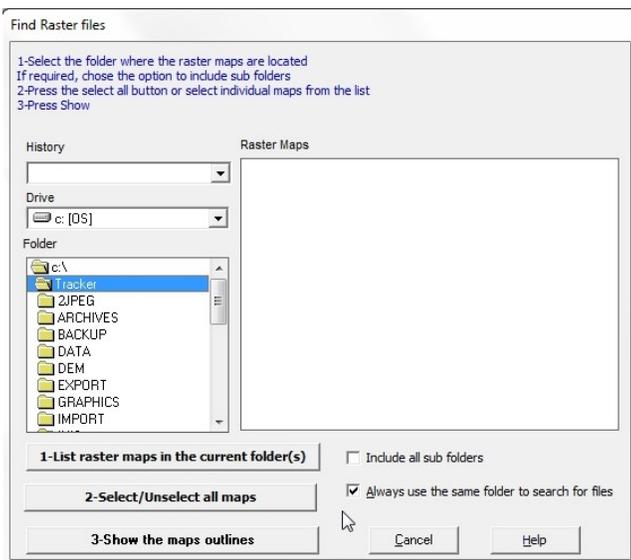
After selecting the Country for which you have proper data a "Find Raster files" toolbox will open allowing you to find and select the files you will use for your project.

Once you have made the necessary selections you will be able to save them into the database for the furtherance of your Project (s).

snapVIEW : Main Menu Alternative (WORLD)

The WORLD tab of the main Menu contains other input options not based on national standards:

GEOTIFF: TIFF in standard GEOTIFF format

TFW/JGW/TAB : Will load TIFF or JPEG UTM maps referenced by a TFW, JGW or TAB file

Digitizing : Loads scanned TIFF and JPEG files to be rectified to available coordinate data

Jeppesen : Loads sectional and WAC charts from the Jeppesen website for subscription holders

Area from background : Allows project backgrounds to be loaded from the Tracker database

Although most of the tabs are quite self explanatory the **Digitizing Tab** does have several options that need further explanation. The tab also includes an option to work directly with a scanner or use an existing image.

To begin, select the "Load and digitize a raster map option". This will open the "Find raster charts" window so you can navigate to the folder containing your image.
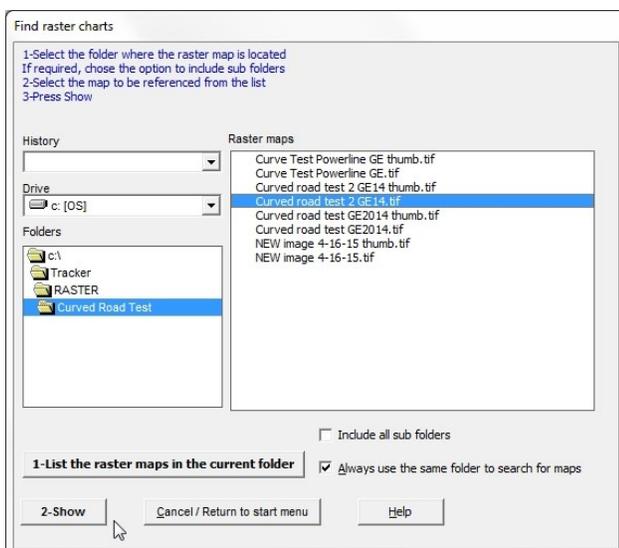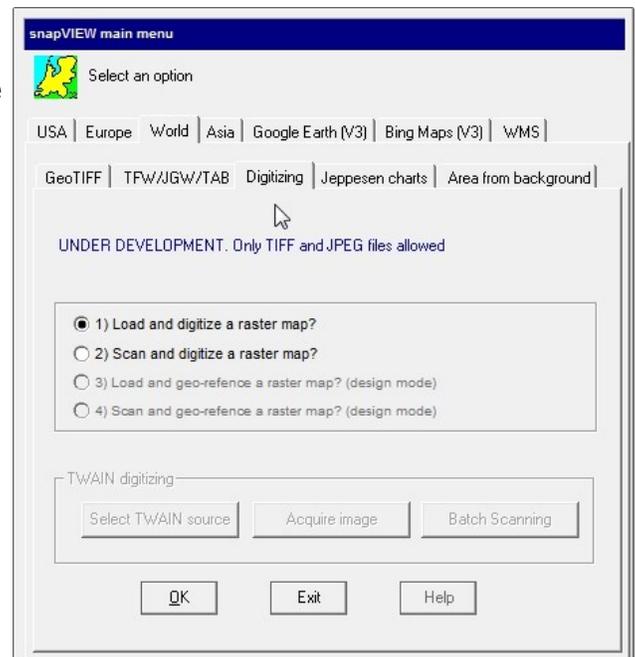
Click the "List the raster maps…" button to view usable images in the folder. Select the image you wish to use and click "Show at the bottom left of the page.

snapVIEW : Main Menu Alternative (WORLD)

Choose coordinate system

Select the coordinate system which will be used
to calibrate the map on the screen
You can only calibrate the map if you know its
coordinate system!

Calibration pattern
○ Use 4 rectangular points (geo or XY)
● Use 4 independent points

Calibration Coordinates
● X,Y   ○ Geographic

Philippines
South Africa
South Africa UTM
Spain UTM-ED50 system
Switzerland
Taiwan Hu-tzu-shan GRS67
Taiwan Hu-tzu-shan WGS84
Taiwan Penghu GRS67
Taiwan Penghu WGS84
Thailand UTM
UK OS National grid
USA State Plane Coordinate System (SPCS)
UTM coordinate system

OK   Cancel   Help

This will bring up the choose coordinate system box with several options
to select from. The calibration pattern allows for either four (4) **perfectly**
rectangular points or four (4) independent points for the calibration proce-
dure.

In either event you <u>must </u>start with the point closest to the N/W corner of
the image and click on that location.

Pick the coordinates format and Datum and then click OK.

A box will come up allowing you to give the point a number and the coor-
dinate values of that point. Click ok and proceed to the N/E corner. Con-
tinue clockwise during this procedure until all four points are completed.
The software will then rectify the image and you can save it .

Enter the Easting and Northing of this point.

drawing

Enter coordinates

Type the grid coordinates

Easting   E   ☐ West (negative longitude)

Northing   N   ☐ South (negative latitude)

☑ Automatically zoom out after finishing entering the point

OK   Cancel
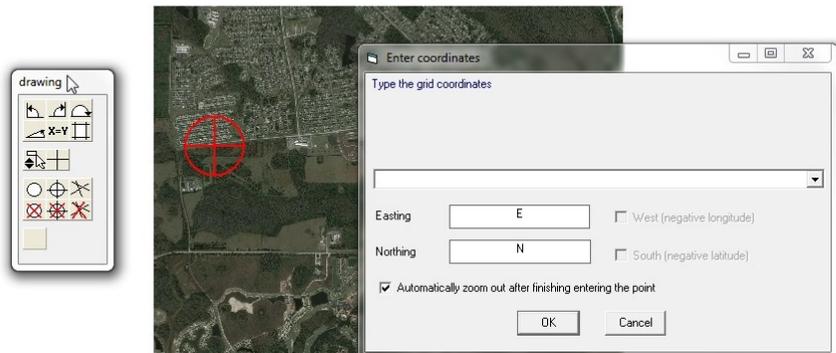
snapVIEW : Main Menu Alternative (ASIA)

Currently the ASIA tab of the snapVIEW main menu contains Taiwanese standards.

Other standards will be added as they are implemented.

snapVIEW : Main Menu Alternative (WMS)

Web Map Service is a standard protocol for sharing georeferenced map images over the
internet. You may also use this tool to import maps from ESRI's ArcGIS Online Map ser-
vices and OpenStreetMap, online services.

snapVIEW : Other Menus and Options

GRID

A grid overlay is available under the pulldown menu on the toolbar.

The overly may be useful for locating, describing or measuring areas, and has several configuration options possible.
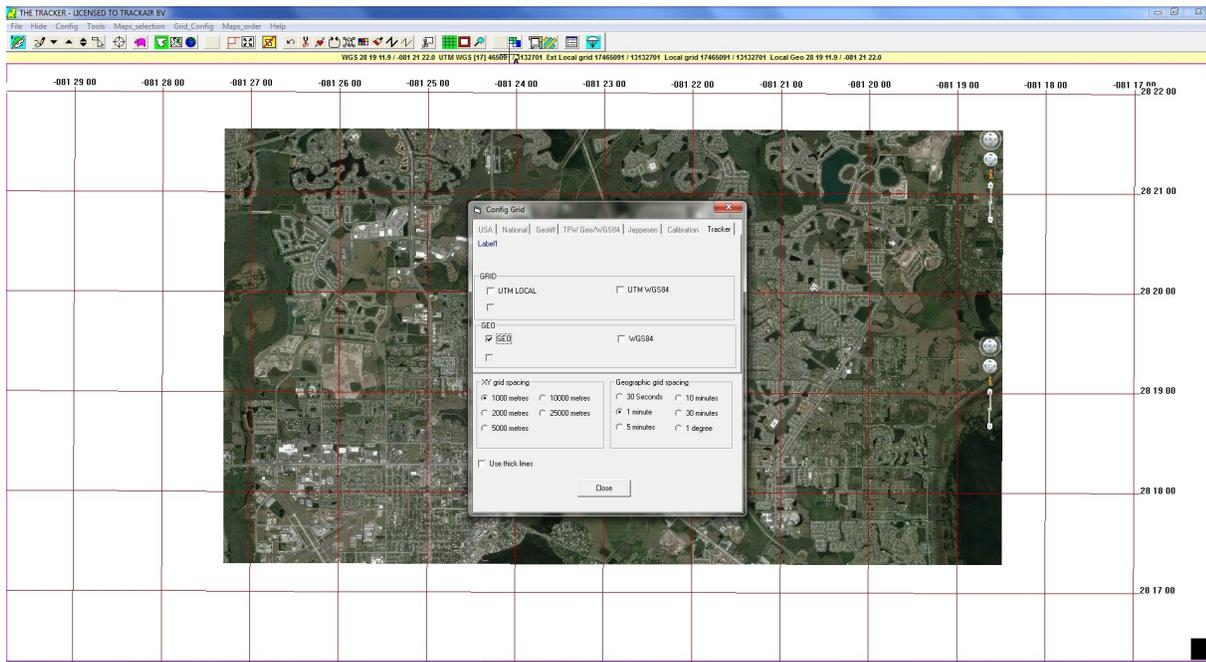
At this writing, only the "TRACKER" tab has been activated, and displays a grid in WGS84 coordinates. Other options are in development, and will be brought on line in accordance with specific customer demand.

snapVIEW : Moving Forward

snapVIEW, the most recent module in the **X-Track Software Suite**, has been conceived to leverage new tools in internet technology, greatly simplifying initial flight planning in response to our customers' continually evolving needs.

Like the other modules in the suite, **snapVIEW** will continue to evolve as enhanced technologies come on line to improve speed and accuracy of input and streamline our customers' workflow .

As a **LEAD'AIR** customer, you are an integral part of this evolution, letting us hear your input and your evolving needs through feedback to the company, while we endeavor to be responsive in implementing the features that will continue to provide you a competitive edge and a fast, efficient workflow.