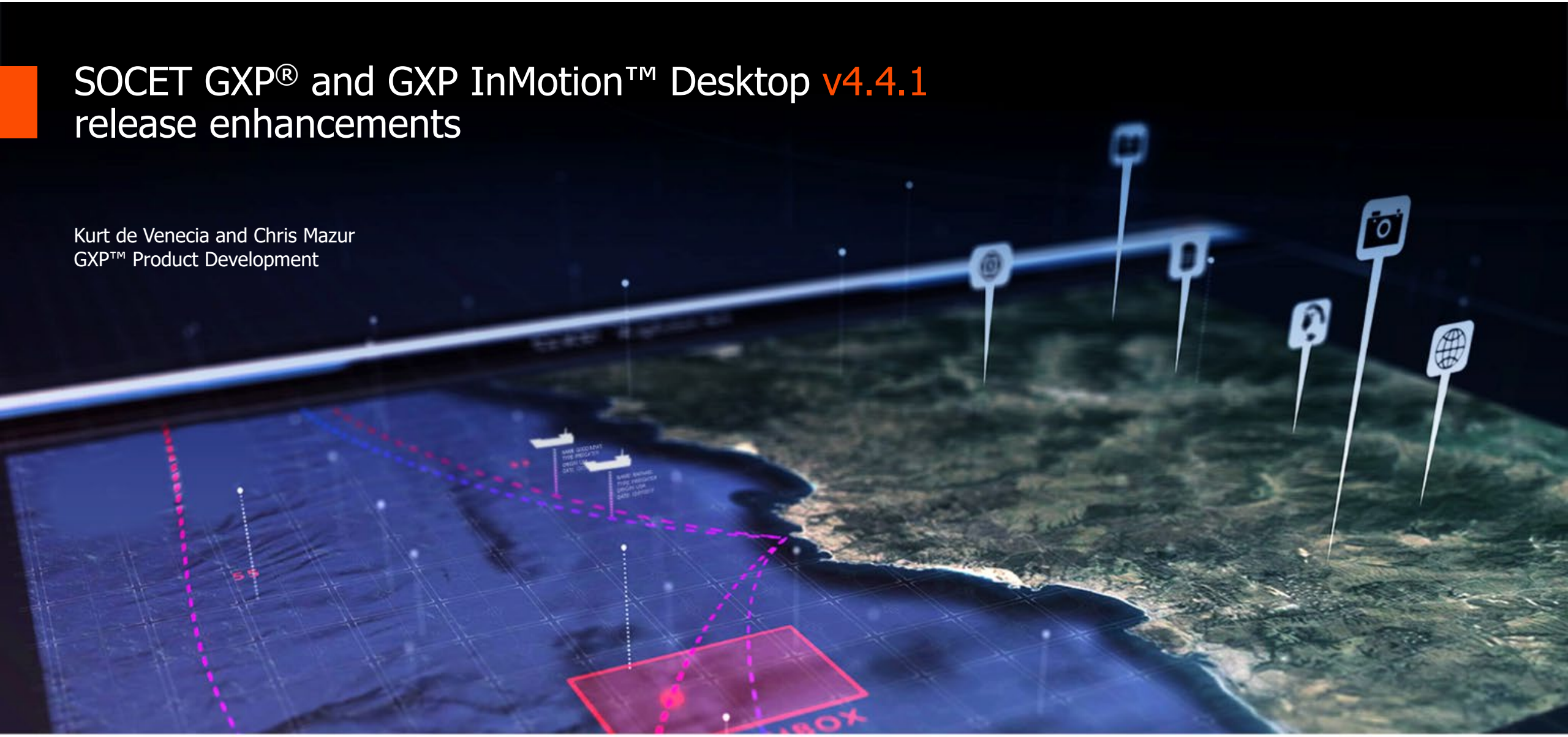
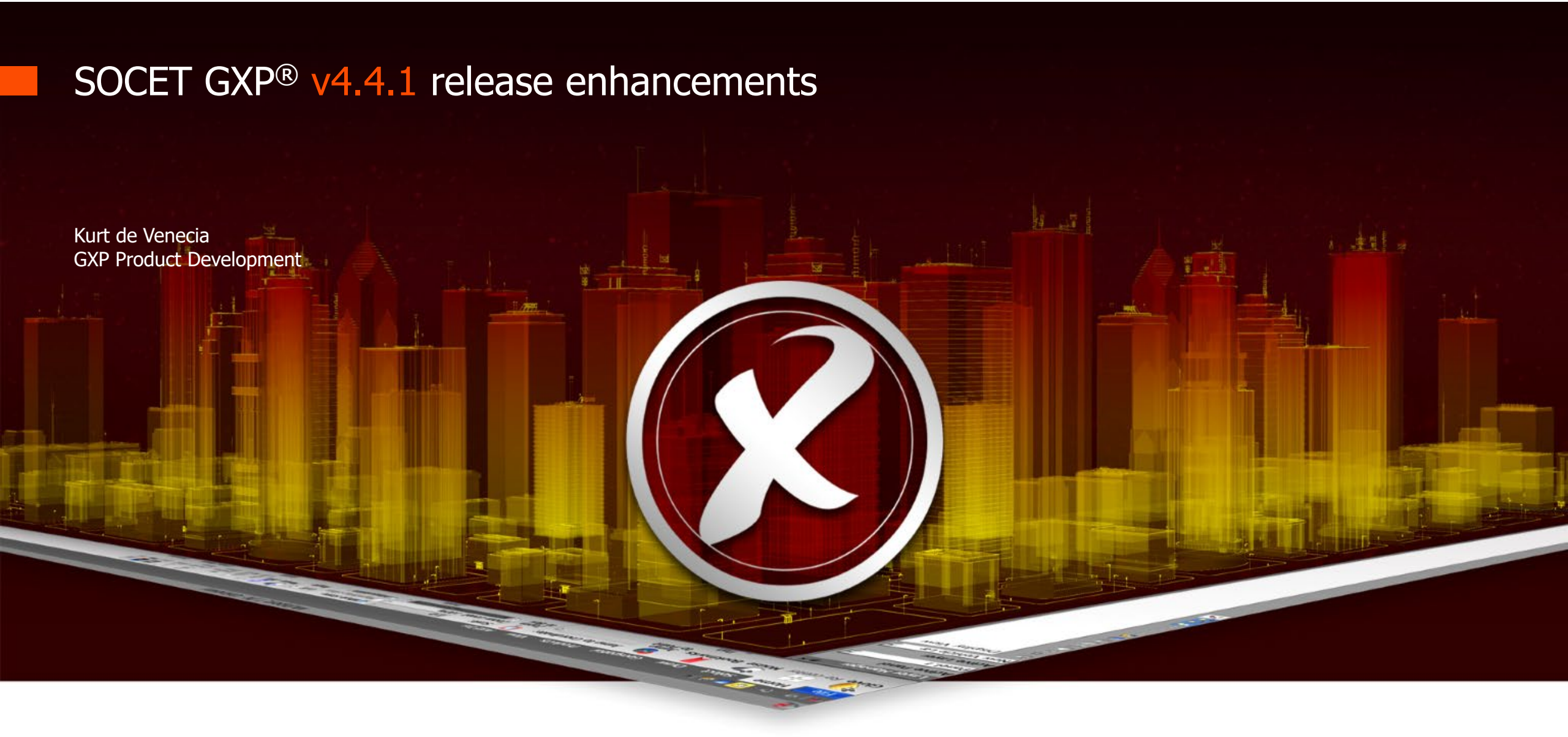
SOCET GXP® and GXP InMotion™ Desktop v4.4.1 release enhancements

Kurt de Venecia and Chris Mazur
GXP™ Product Development



BAE SYSTEMS

SOCET GXP® v4.4.1 release enhancements



Kurt de Venecia
GXP Product Development

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SOCET GXP® v4.4.1 release enhancements

- This presentation contains the enhancements included in SOCET GXP v4.4.1
- The latest update - SOCET GXP v4.4.1.3 - released on April 02, 2021*
  - It is a full release that can be installed by itself, or as an update or upgrade to an existing SOCET GXP installation
- The release cadence for SOCET GXP will continue to be quarterly
- The next update for this release is planned for June 2021
- SOCET GXP v4.5 (major release) is planned for June 2021
  - It will include updates to the SOCET GXP Application Programming Interface (API)
  - It will require new, updated licenses

*Items in orange are enhancements included in the SOCET GXP v4.4.1.3 update

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Infrastructure updates

- MSP v1.6.3
- New Sensors, Imagery, and other GEOINT data
  - Formosat-5
  - Sensor Independent Complex and Derived Data (SICD and SIDD, respectively)
  - Sentinel-2B
  - ICEYE
  - Pix4D Camera Calibration Support / Ingest
  - Hawkeye 360 GeoJASON
  - Generic Point-Cloud Model (GPM) sensor support for Binary Point File (BPF) LiDAR data
  - Motion Imagery Extensions for NITF (MIE4NITF) imagery and associated data
- New Geoids
  - GGM10
- New Coordinate Systems
  - 72 new Japanese coordinate systems
  - Local Space Rectangular (LSR) with Curvature
  - NAD 83 UTM Zones 1-23N
  - Slovenia 1996 / Slovene National Grid
  - Polar Stereographic Variant B and C
  - Dutch Amersfoort
  - Hungary HD72 (EPSG:23700)
- New Horizontal Datums
  - Japanese Geodetic Datum 2000
  - Japanese Geodetic Datum 2011
- New Coordinate System Format
  - N DD° MM.mm' E DDD° MM.mm'

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Infrastructure updates ...2

- New Terrain Data Formats
  - TERCOM
- Software updates
  - QT has been updated to v5.11.1
  - FFmpeg has been updated to v4.2.1.2.23
  - Install Anywhere has been updated to v2018
  - Boost libraries have been updated to v1.70
  - PostgreSQL® 12.4 and PostGIS 3.0.2

- Performance enhancements
  - Improved loading performance of stereo model lists
  - Performance updates for large databases when doing attribute only updates
  - JPIP streaming performance enhancements
  - Ground Moving Target Indicator (GMTI) data is much more performant when roaming, zooming, and animating

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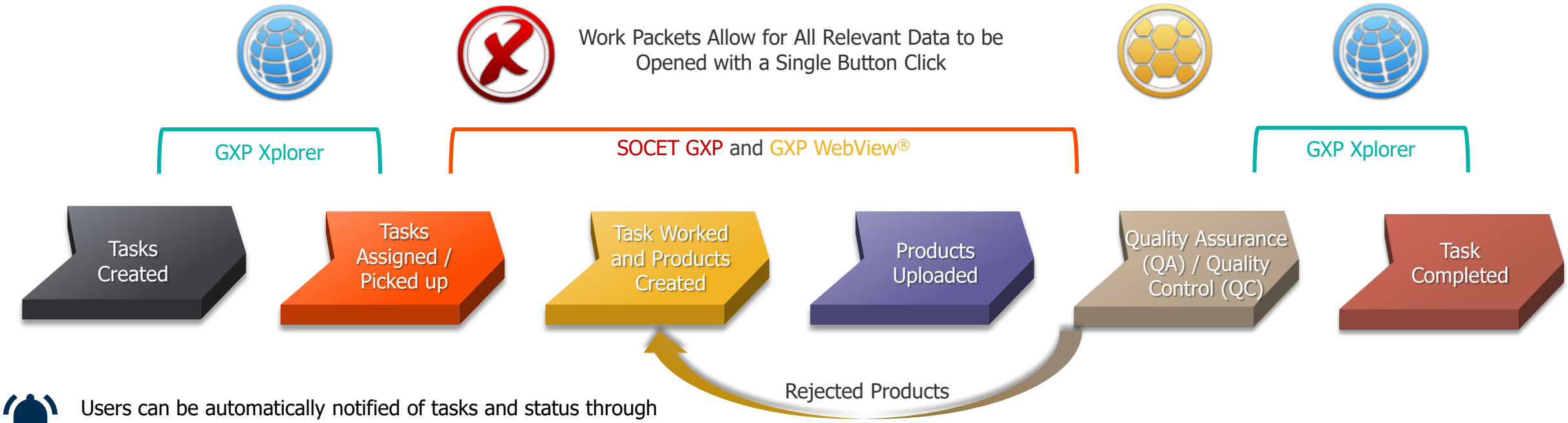
Workflow Management

Manage tasks from creation to analysis to quality control through approval. Utilize GXP Xplorer® to create and manage workflow tasks that can be exploited and reviewed in SOCET GXP.



Users can be automatically notified of tasks and status through GXP Xplorer notification services

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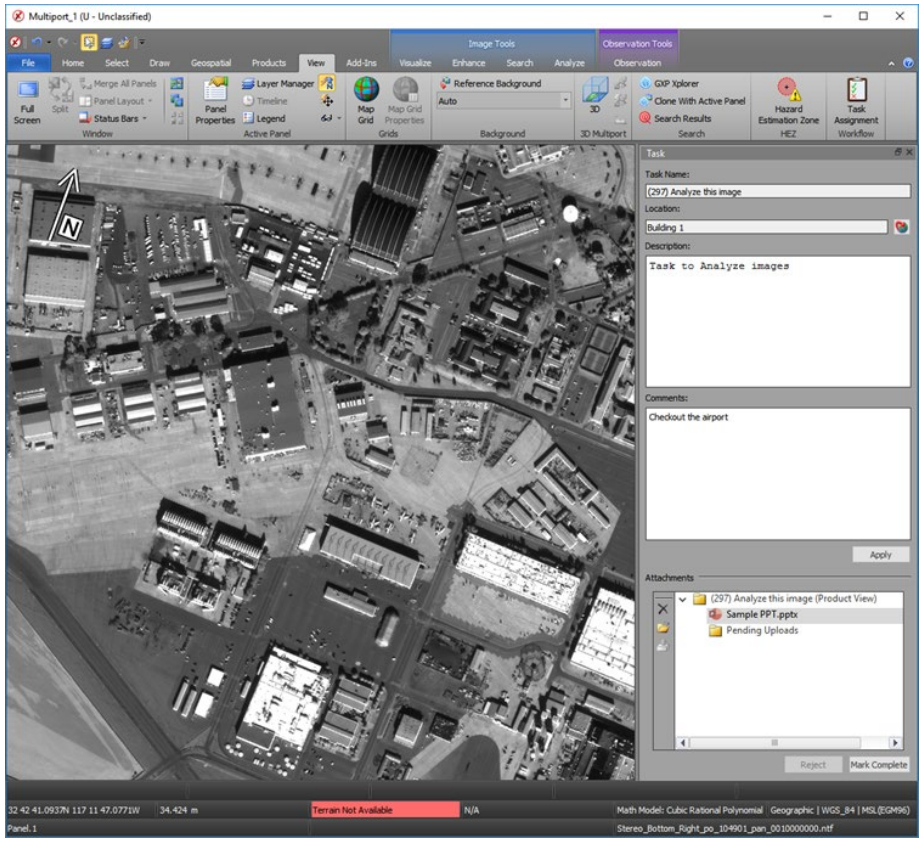
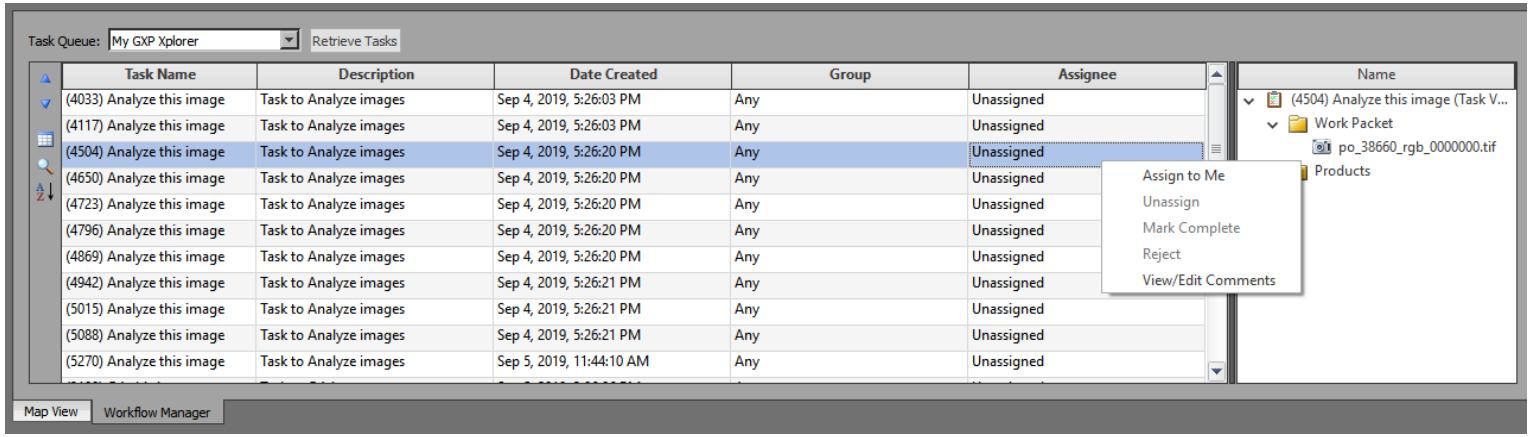
Workflow Management …2



Imagery courtesy of Maxar.

- View tasks available to be worked or reviewed directly in SOCET GXP
- Tasks and associated Workspaces can be opened from GXP Xplorer
- Automatically load data associated with each task for easy analysis
- Create and upload products for each task to allow them to be reviewed for quality assurance and dissemination utilizing GXP Xplorer
- Create and review Structured Observation Management (SOM) detections as a part of Workflow Management
- Workspace clean up at job completion
- Remove the option to open individual items from within the workflow task



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GXP Xplorer Status window from the SOCET GXP Workspace Manager

- New tab on the Workspace Manager
- View connection status
- Edit and manage connections
- Sign in/out
- Password reset

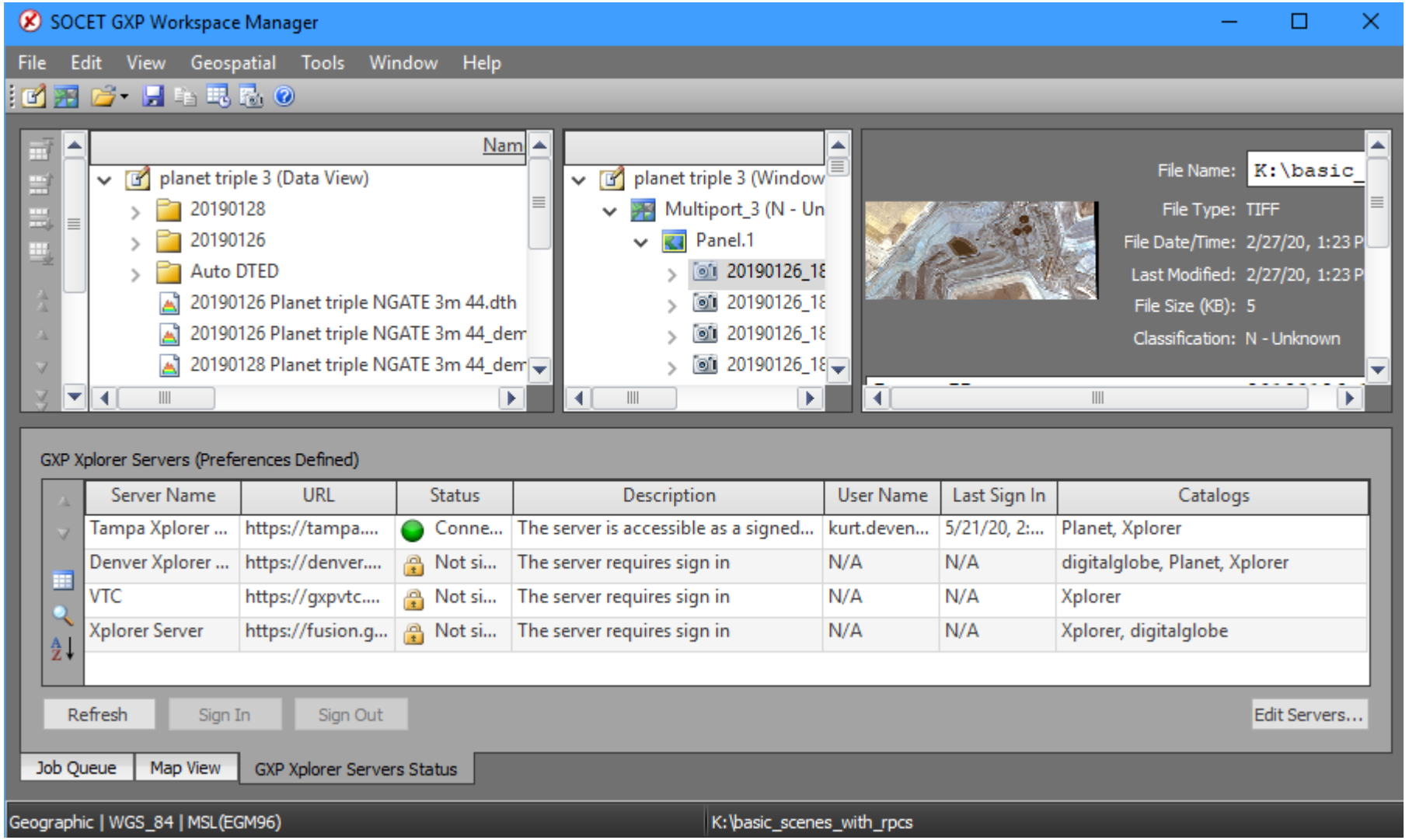
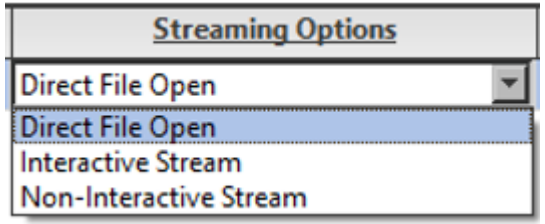


Image Streaming Preferences for the WIM and/or GXP Xplorer

- Direct File Open (DFO): Option to load data directly into the SOCET GXP Multiport™ by reading imagery and associated metadata from a local or networked storage device.
- Interactive Stream: Option to pixel stream imagery and associated metadata from the GXP Xplorer Platform showing interactive enhanced levels of detail for zoom and roam.
- Non-Interactive Stream: Option to pixel stream imagery and associated metadata from the GXP Xplorer Platform without enhanced levels of detail for zoom and roam allowing for full display image enhancements to be applied before streaming into the SOCET GXP Multiport.



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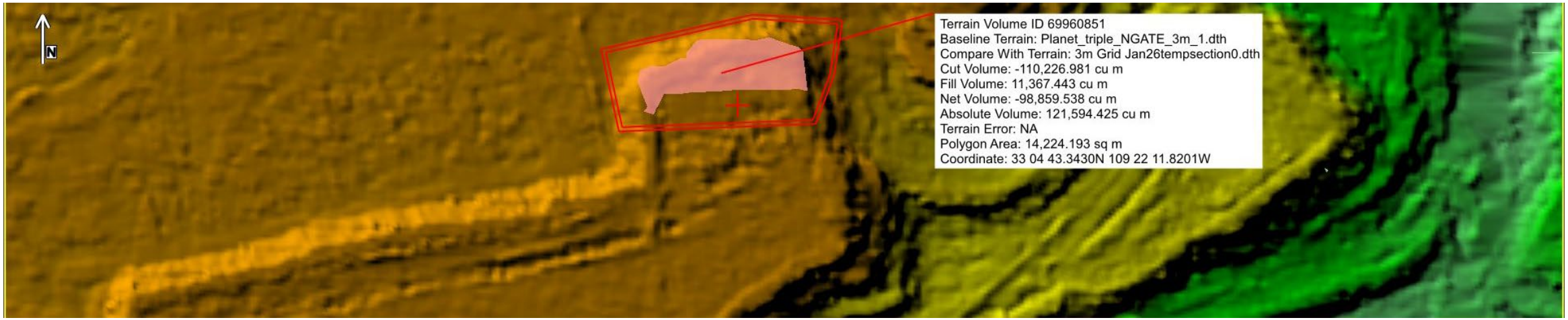
GXP Xplorer Terrain for Auto-Loading into SOCET GXP

- Define GXP Xplorer server for cataloged terrain used to auto-load into the SOCET GXP Multiport
- Best available terrain is used for derived elevation of imagery loaded into the Multiport
- Not limited to Digital Terrain Elevation Data (DTED) terrain sources



Imagery courtesy of Maxar.

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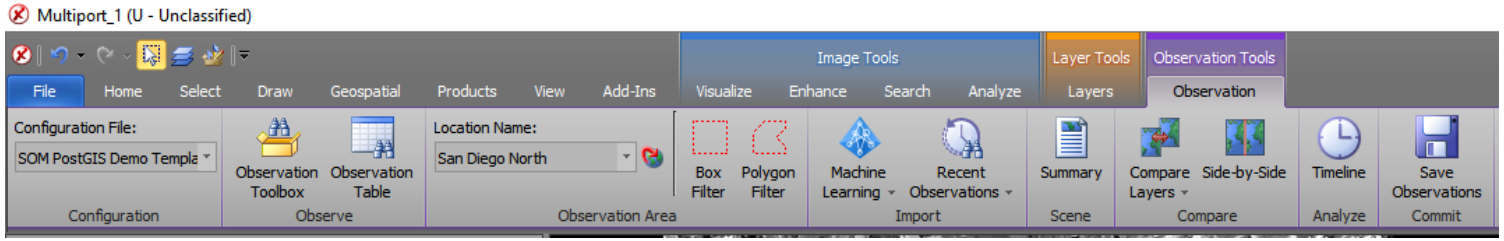
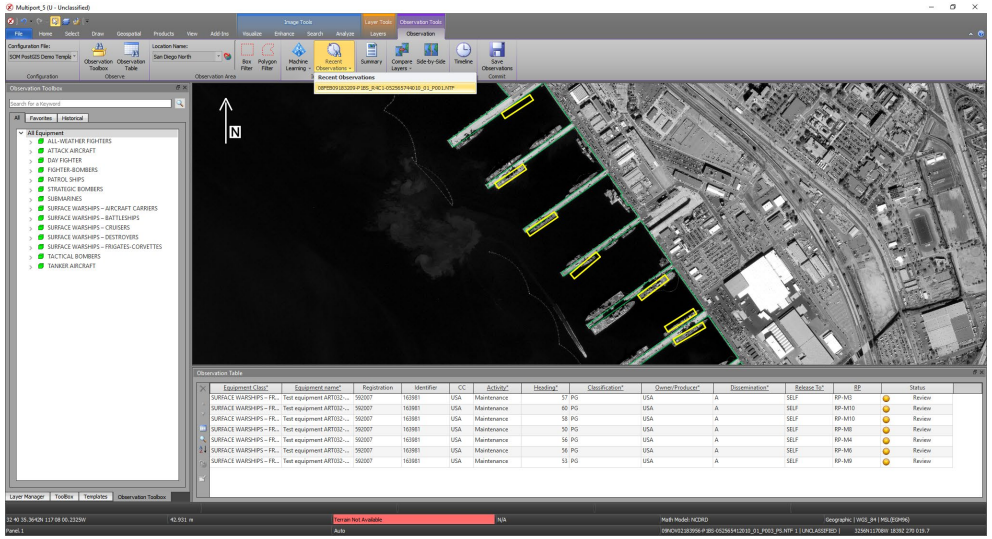
SOM collection in SOCET GXP

New Ribbon allowing easy extraction of observations at a facility over time. Both historical observations and machine learning detections can be easily imported to increase extraction efficiency as well as for creating trend analysis reports.

- Utilize a variety of sources for storing the Observations such as GXP Xplorer, Esri® Databases (DBs), or PostGIS
- Automatically jump to stored facilities that analysts need to monitor over time
- Utilize the Observation Toolbox to quickly select equipment of interest and have attributes automatically populated
- Allow for manual review and attribution of features with a convenient table showing all observations in the scene
- Associate observations with optional reporting positions to correct coordinate inaccuracies caused by differing collection geometries





Imagery courtesy of Maxar.

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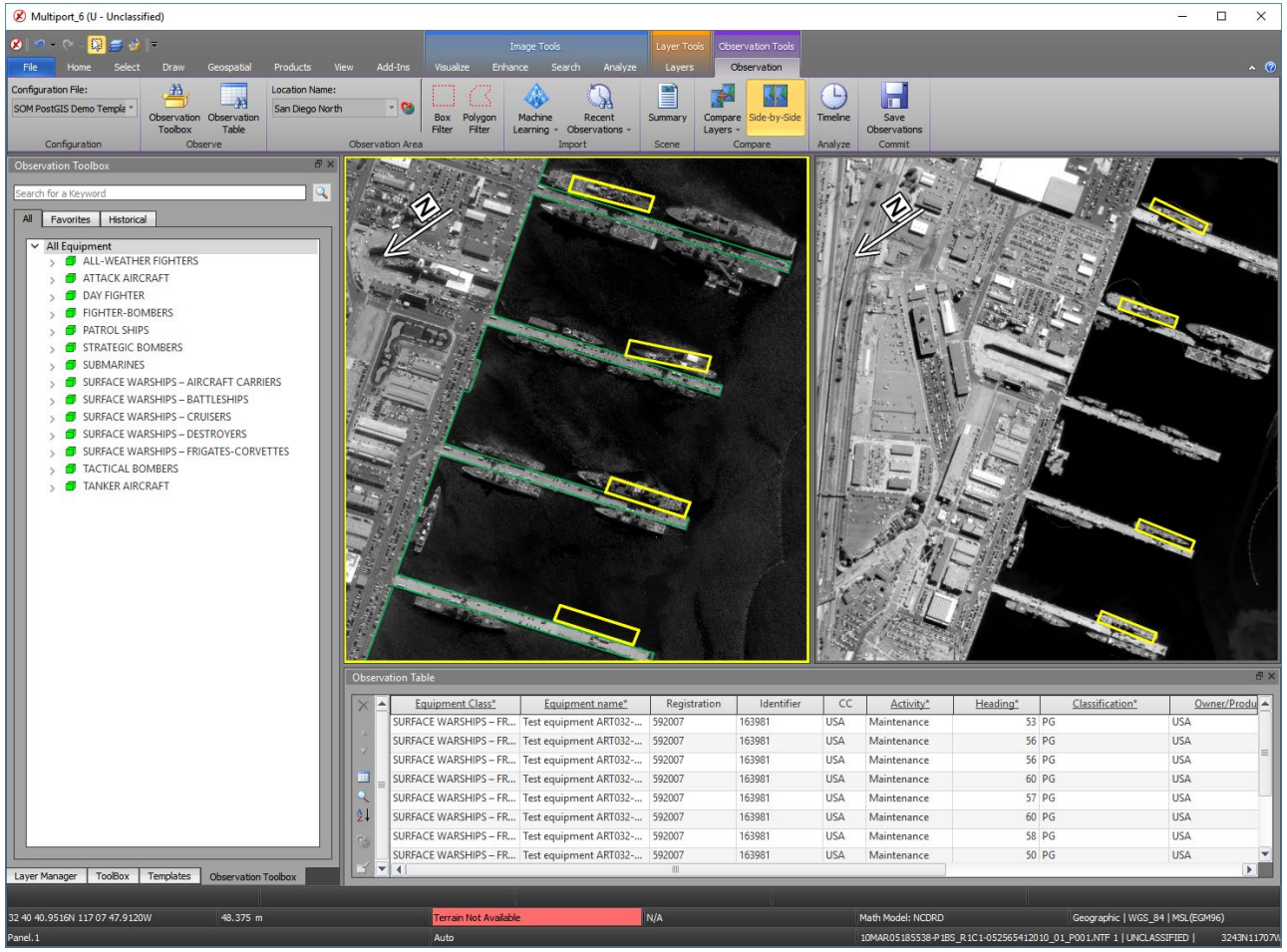
SOM collection in SOCET GXP …2



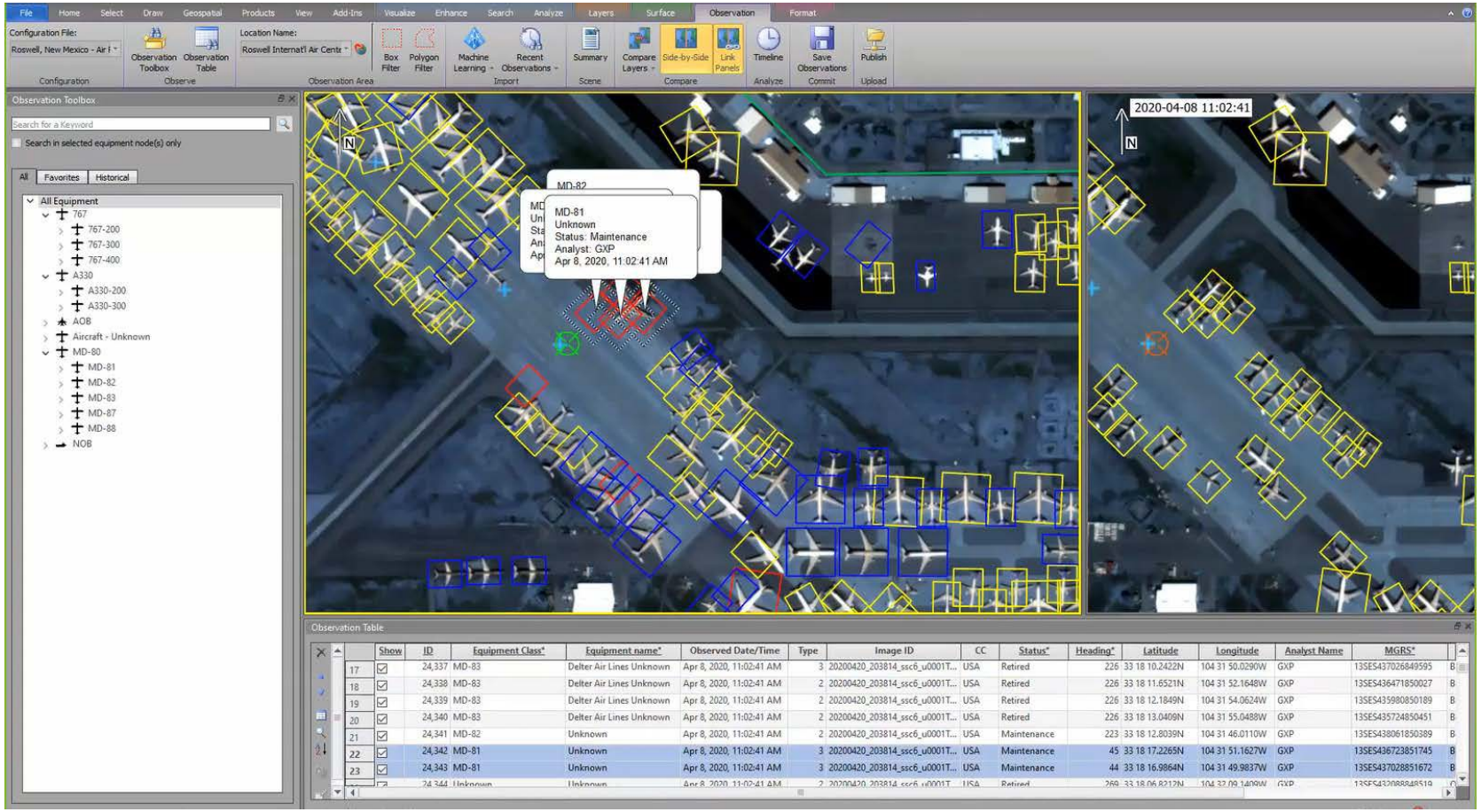
Imagery courtesy of Maxar.

- View historical observations over the same facility from previous dates
  - Side-by-side views make comparisons simple
  - Obstructed views are attributed for context
- Timeline analysis lets users animate activity over time
- Symbology improvements for machine learning integration with SOM
- Added a new publish button to the observation ribbon
- Observations with length (len) and width (wid) auto-attributes can be captured with 2-click and 4-click tools
- Usability enhancements for observations tool box including search, filtering, add to favorites, and user controls for editing

SOM collection in SOCET GXP …3

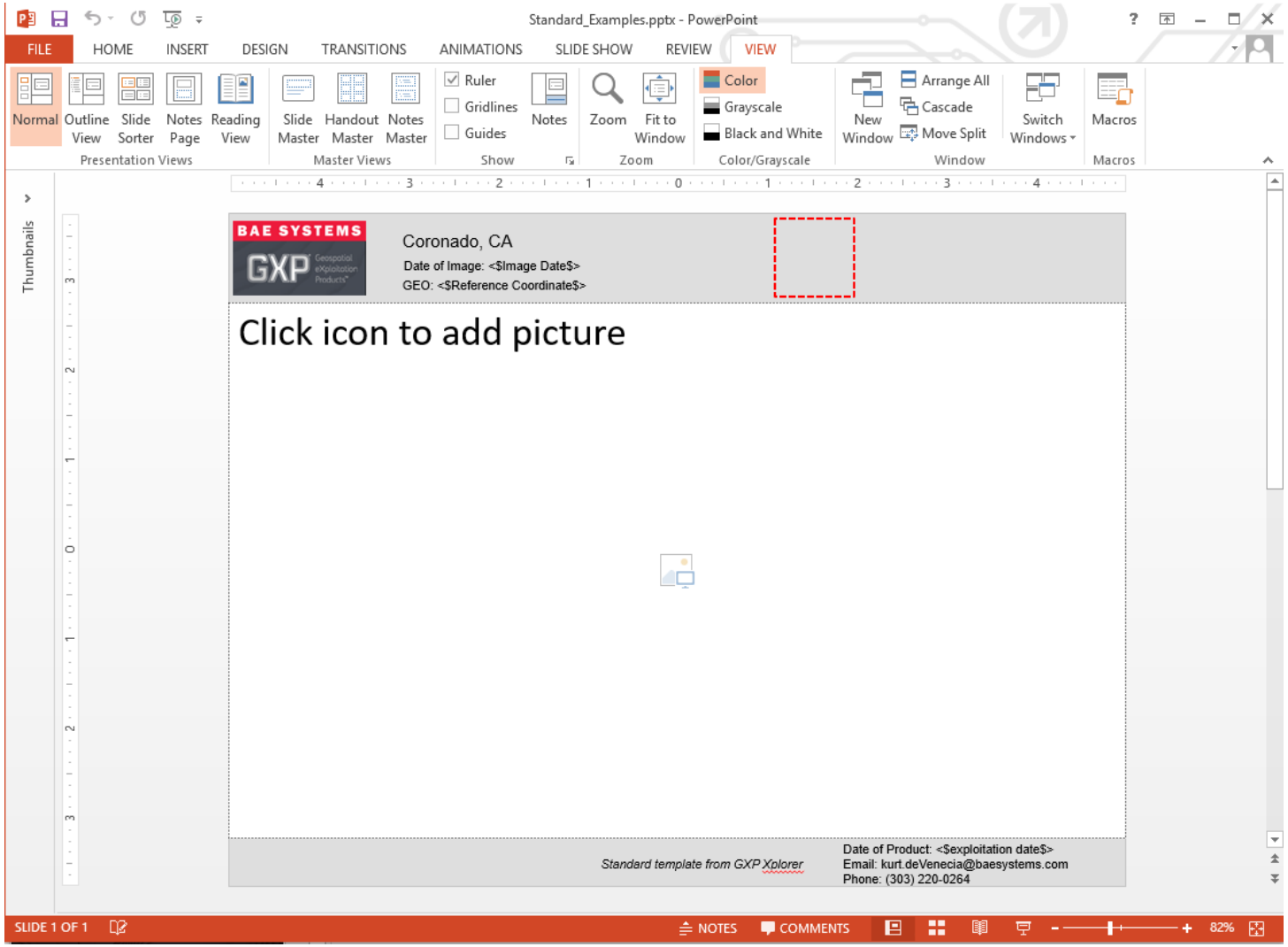
Integration with ML

- Bring in automated detections from machine learning algorithms managed by GXP Xplorer Platform or SOCET GXP Desktop
  - Allows for quick confirmation, rejection and verification of detections
- Enable right-click to show attributes
- Easy copy of attributes to ML observations
- Display observation text fields for report generation including the finishing tool



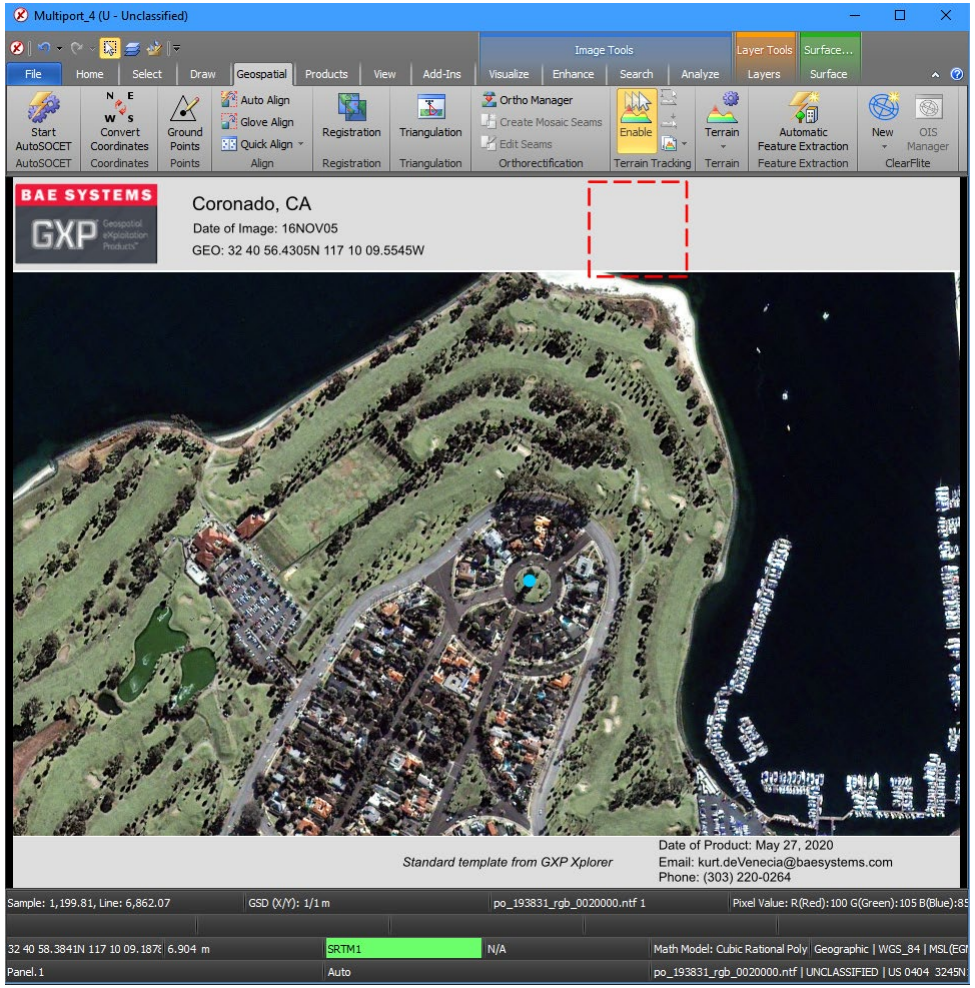
Export to PowerPoint®

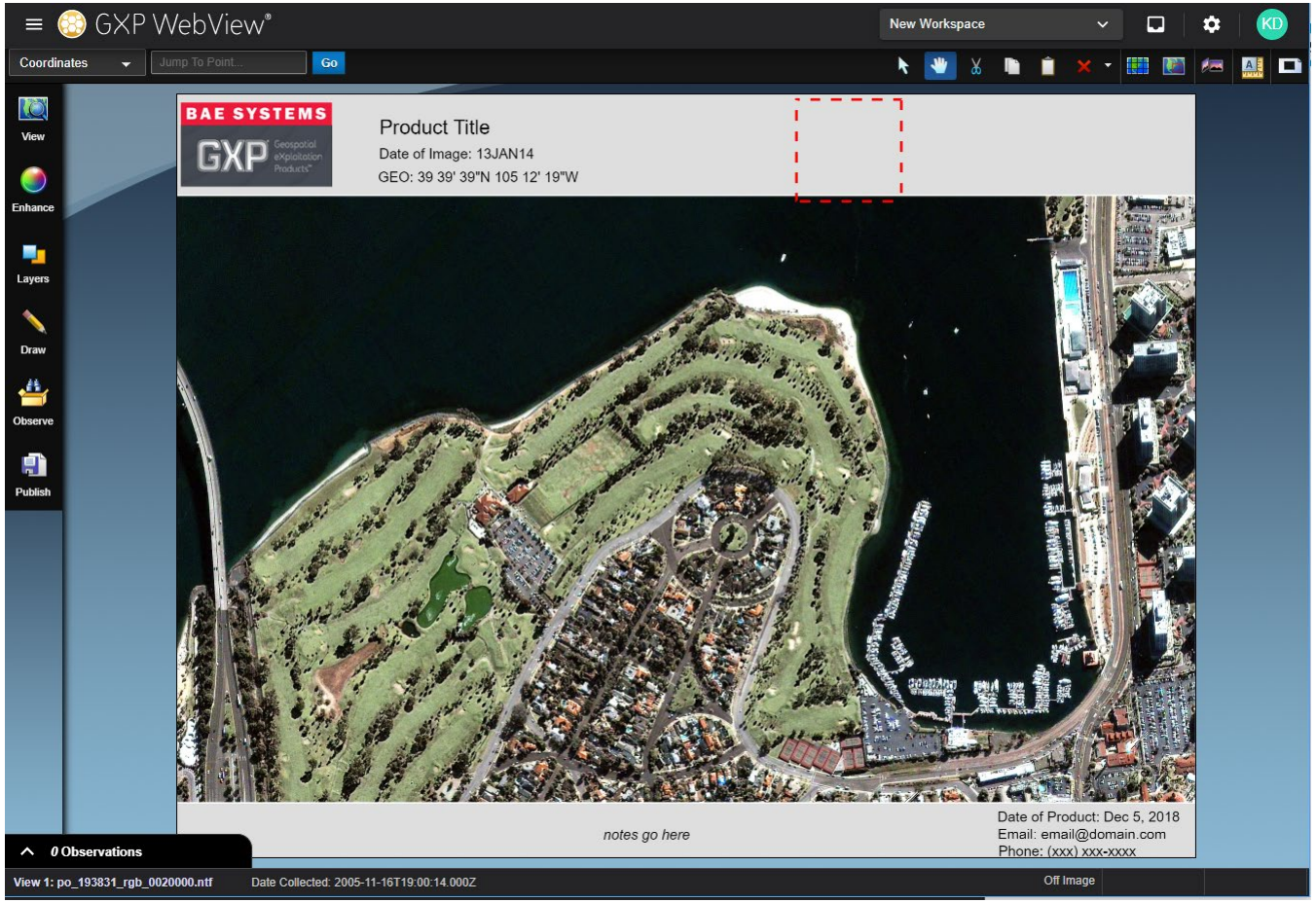
- Product templates are compatible between SOCET GXP and GXP WebView
- Based on Microsoft® PowerPoint *.pptx
- Still supports auto-labels, editable text and graphics, and PowerPoint notes



Export to PowerPoint …2

"Standard Examples.pptx" from GXP Xplorer Platform v2.4.2 applied in SOCET GXP (left) and GXP WebView (below)

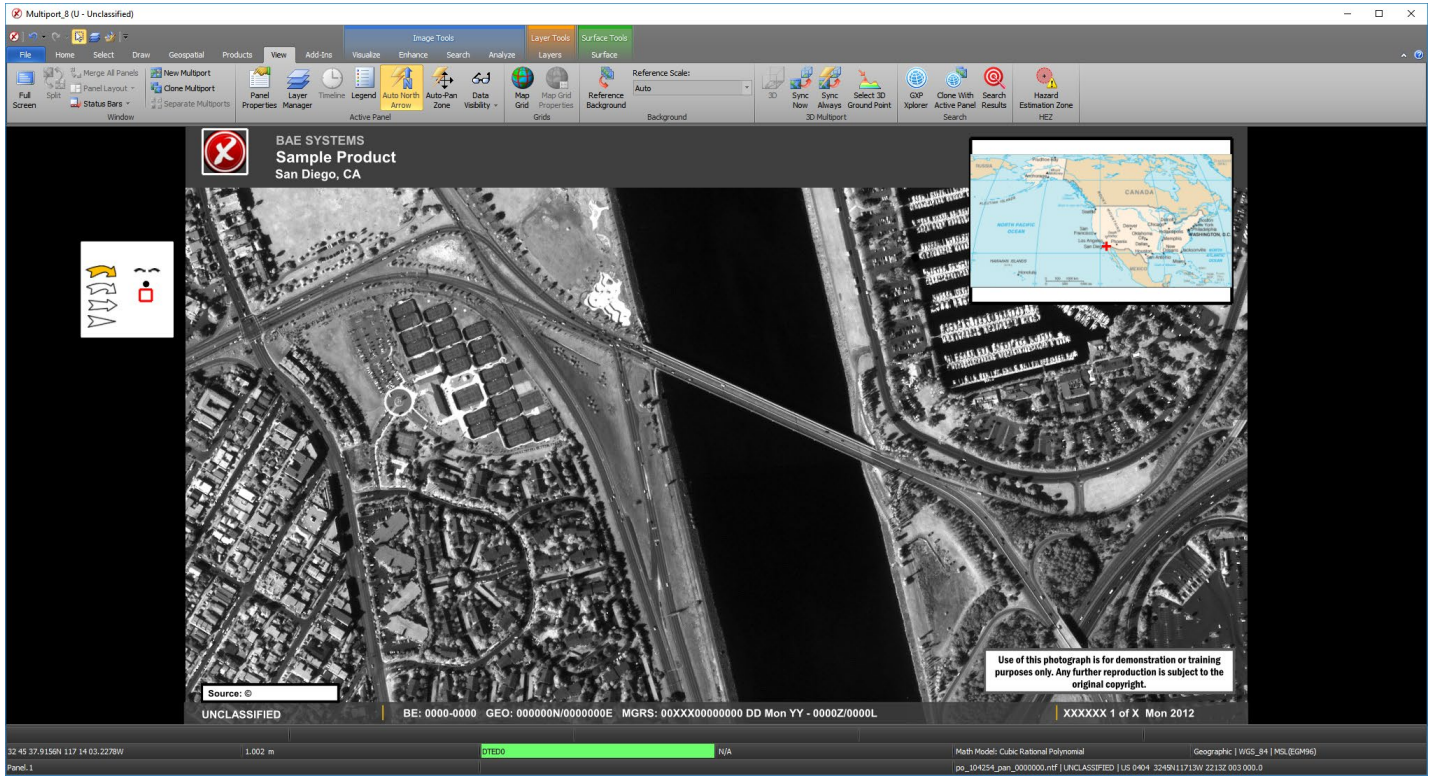




Imagery courtesy of Maxar.

Updates for Product Templates

- Support for graphics in template margins
- Templates are retained in Image List



Imagery courtesy of Maxar.

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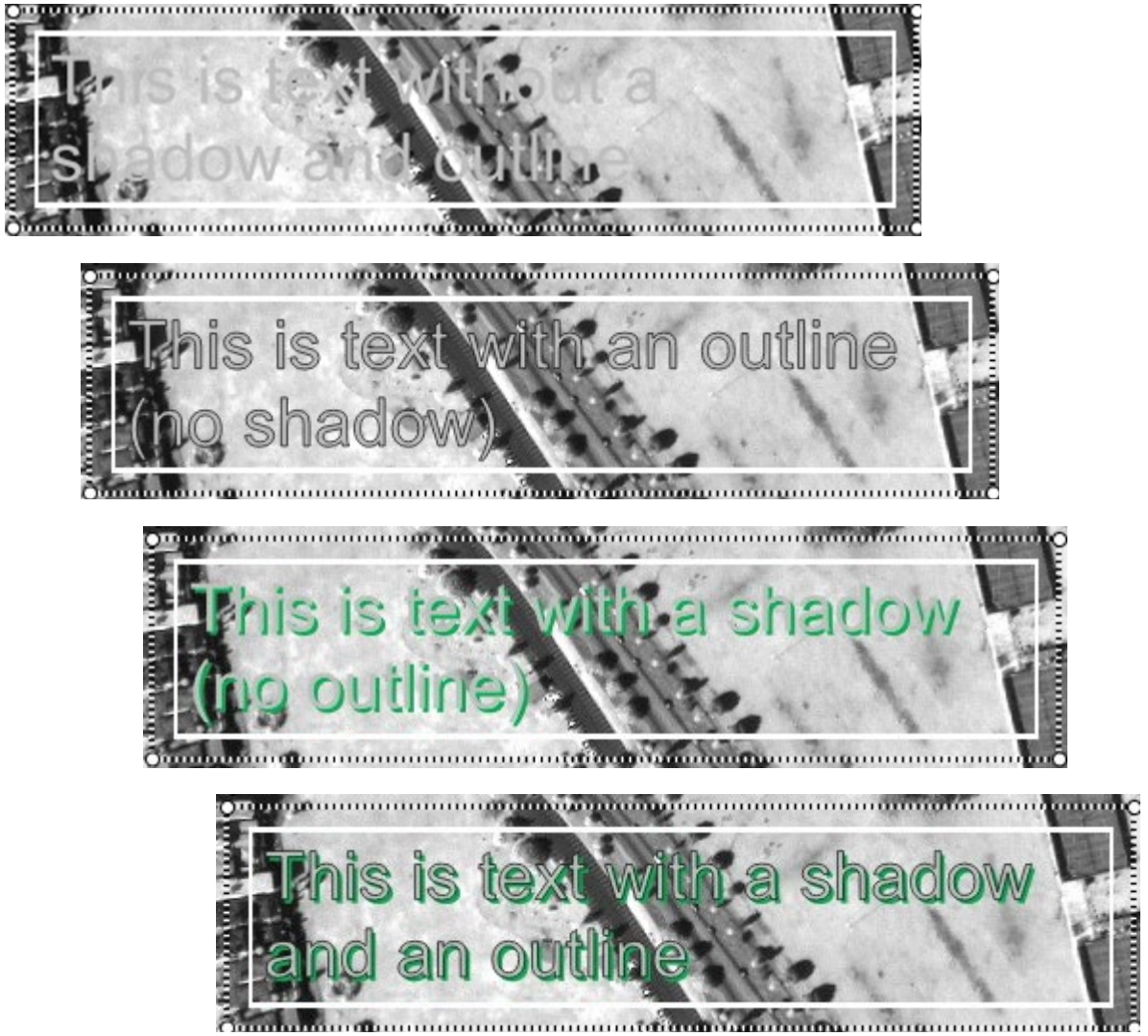
Text Character Outline, Shadow Color, and Offset

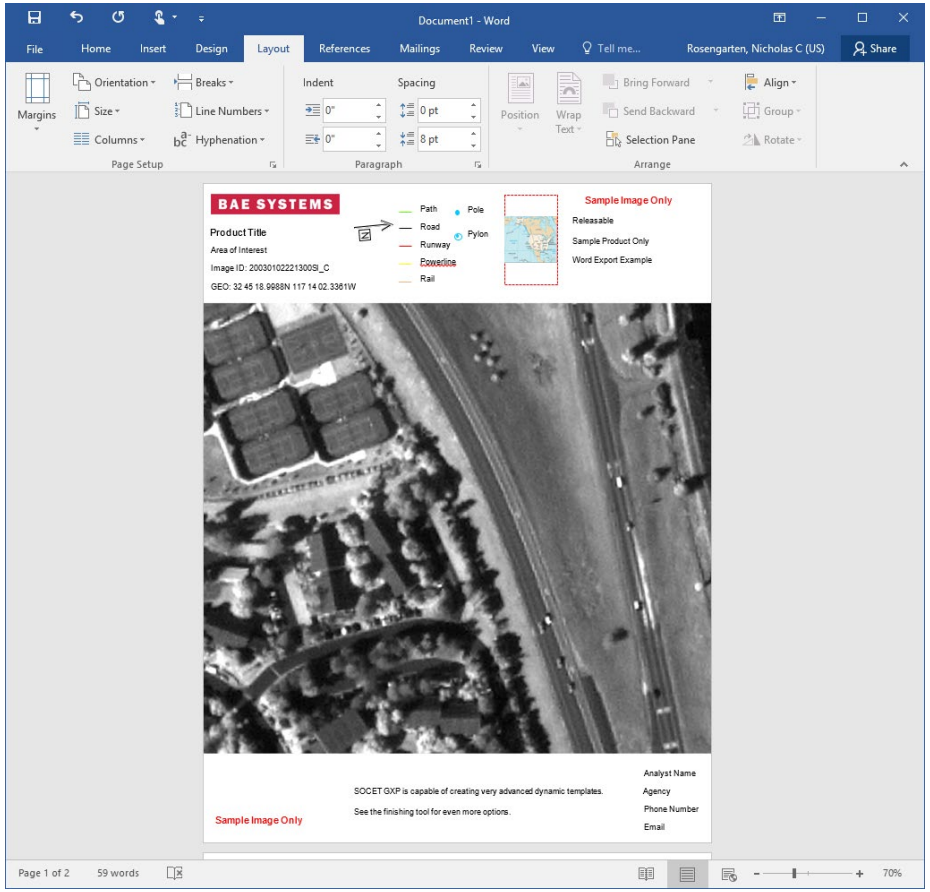
- Updates for font types
  - Shadow text, color, and outline options



Imagery courtesy of Maxar.

Export to Microsoft Word

Export products to Microsoft Word directly from SOCET GXP.



- Optionally create editable graphics
  - Controlled with preferences
- Products can be sent from multiple locations
  - 2D Multiport
  - 3D Multiport
  - Finishing Tool
  - Xport
- Users can also export to Hangul Word Processor

Imagery courtesy of Maxar.

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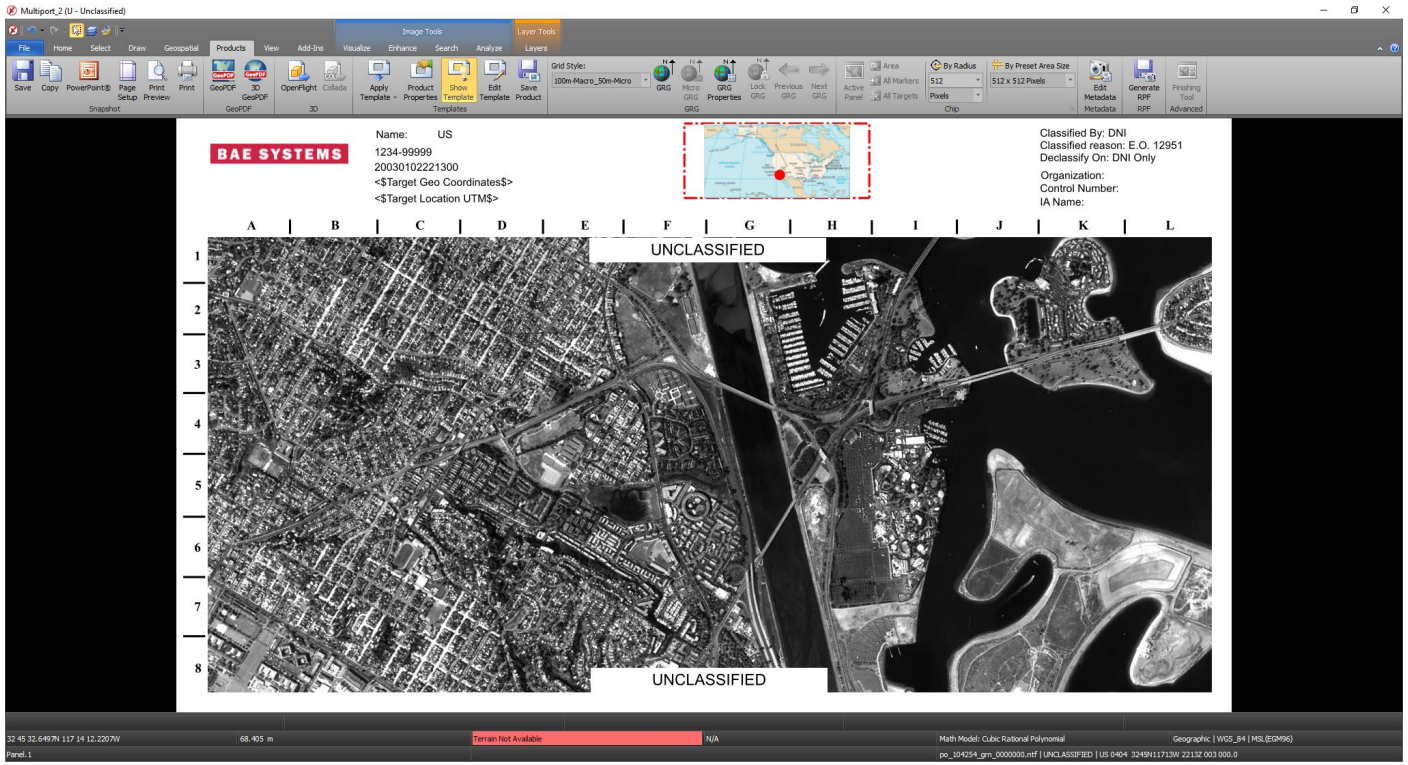
Automap updates

Automatically place a geo-registered dot on the Automap to show image location.



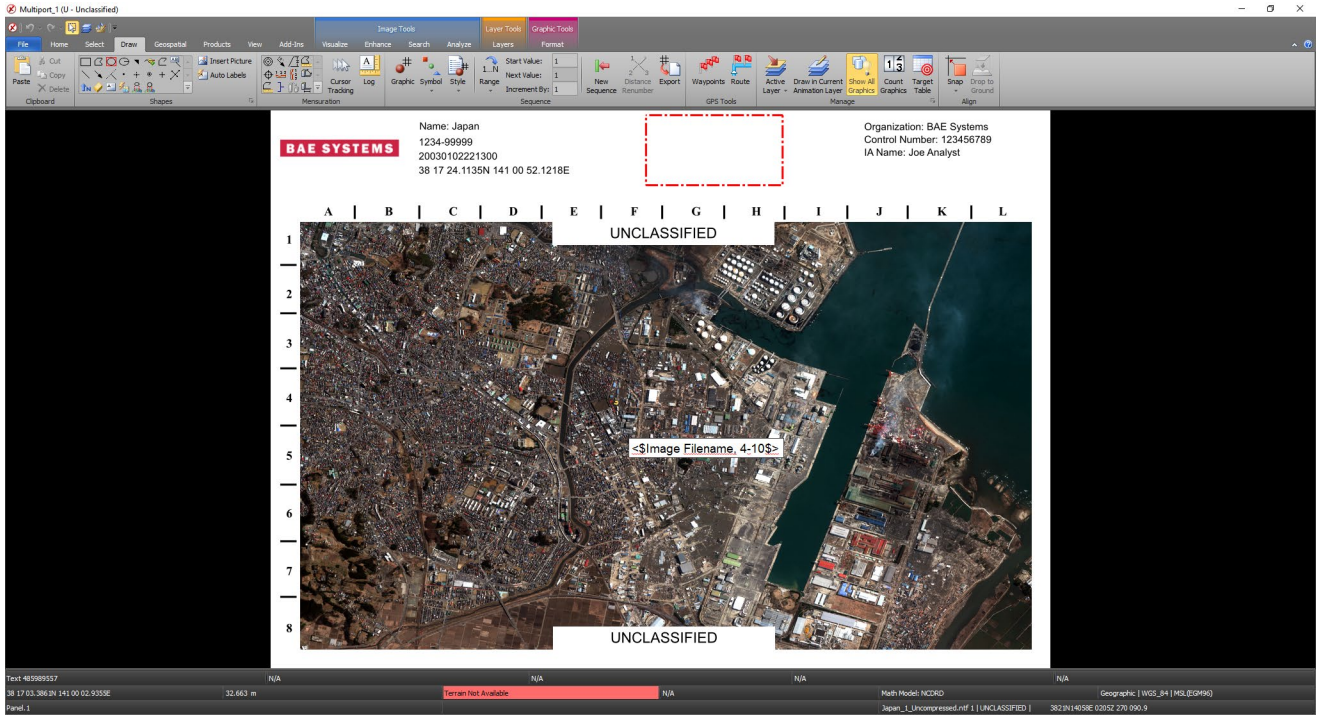
Imagery courtesy of Maxar.

BAE SYSTEMS

Autolabel updates

Pull partial strings from image metadata for use in templates or feature attribution. Allow hierarchical fallback Autolabels to allow pulling a piece of metadata from different tags depending on the image being exploited.

- Extract partial strings using <$Autolabel, #-#$>
- Customizable file allows for creation of Autolabels that pull from different locations (i.e. Time over Target could be stored in Acquisition Date, TOT, or Collection Time)



Imagery courtesy of Maxar.

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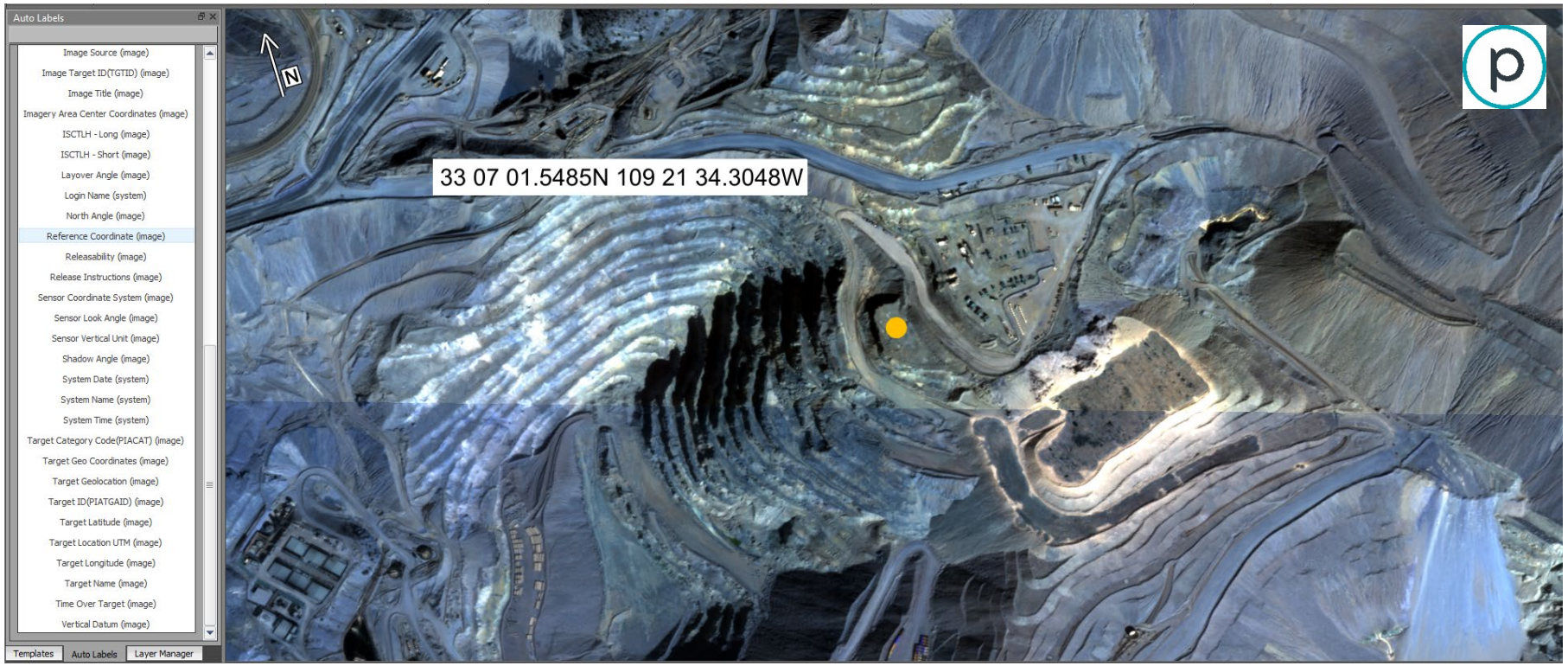
Autolabel updates ...2

- New reference coordinate autolabel allowing point features or image pixels to display their coordinates
- New Target Location Error (TLE) autolabel computed as the square root of the sum of the squares from the Circular Error/Linear Error (CE/LE) values



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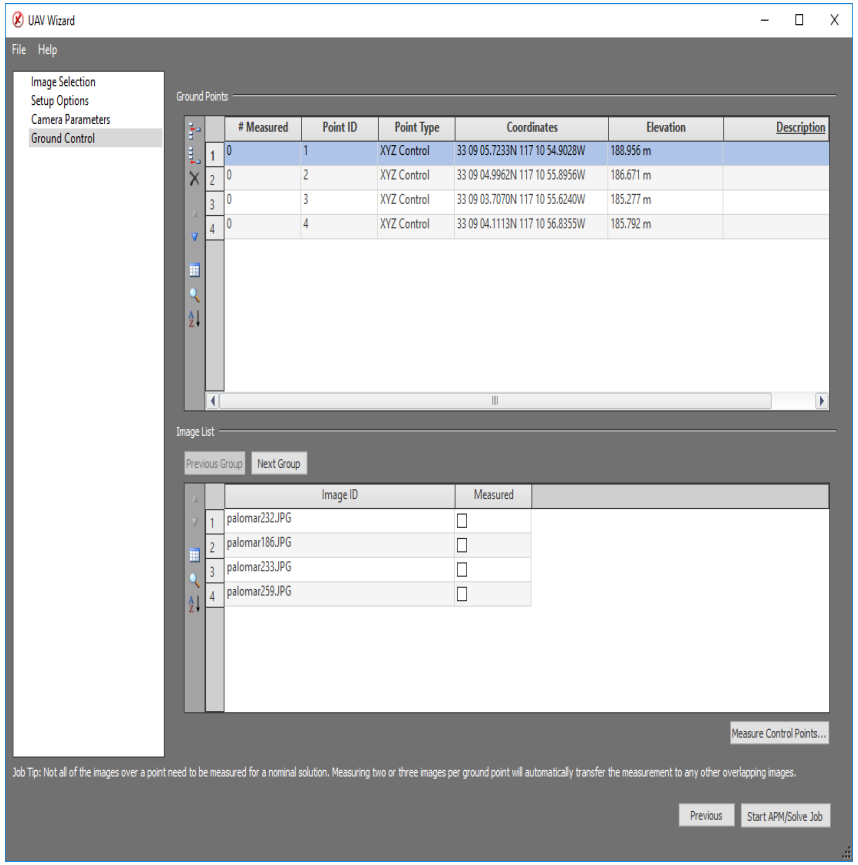
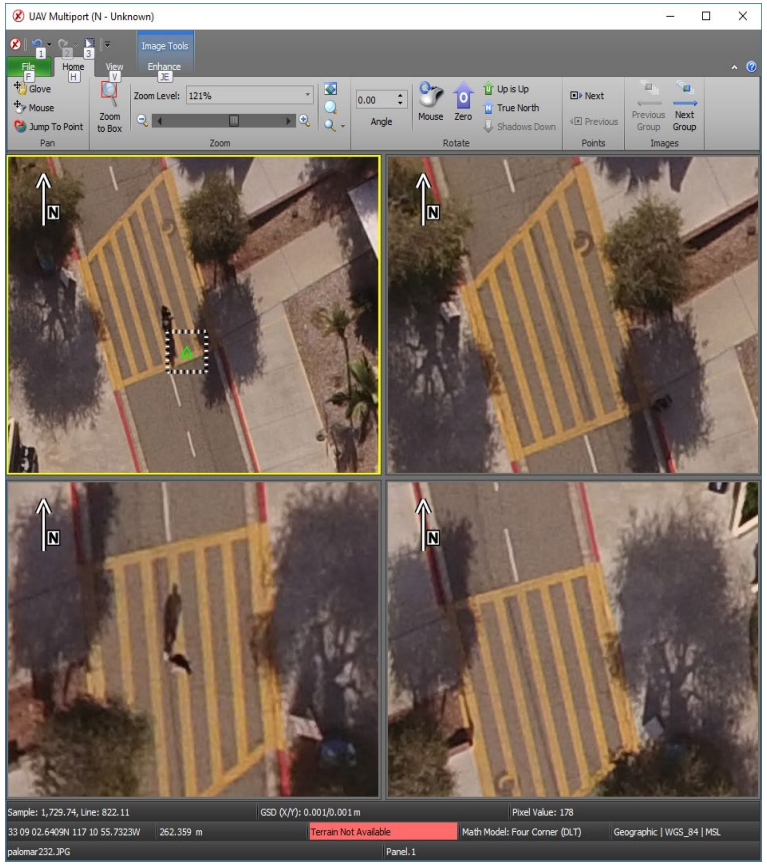
Unmanned Aerial Vehicle (UAV) processing

Create vibrant 3-D output products from UAV/drone imagery with limited geospatial metadata.





- Intuitive wizard walks users from image import to output product creation
- Read camera parameters from images
- Automatically find image tie points to mosaic and georeferenced images
- Optionally import and pick ground control points for a more accurate solution

Imagery courtesy of Palomar College.

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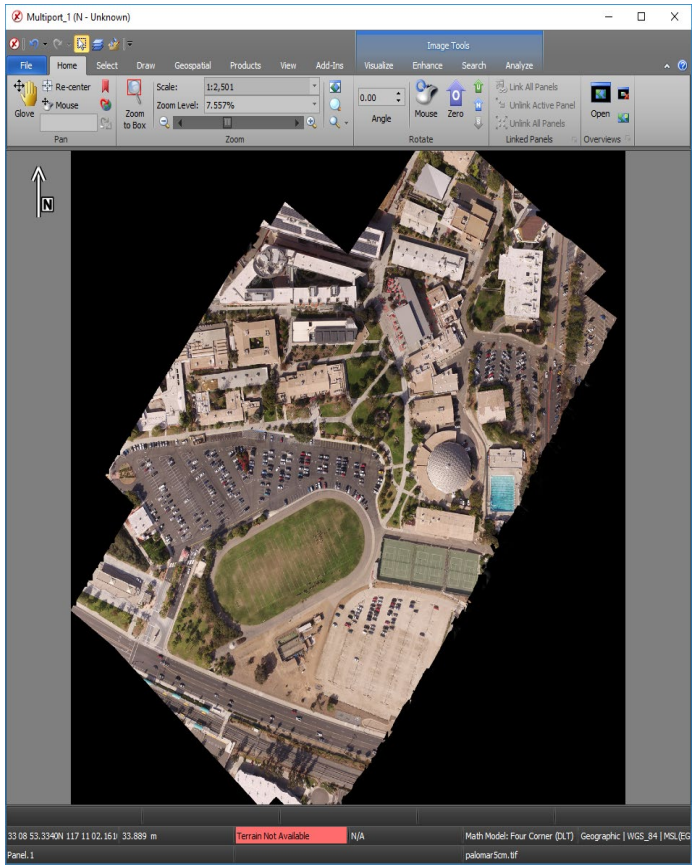
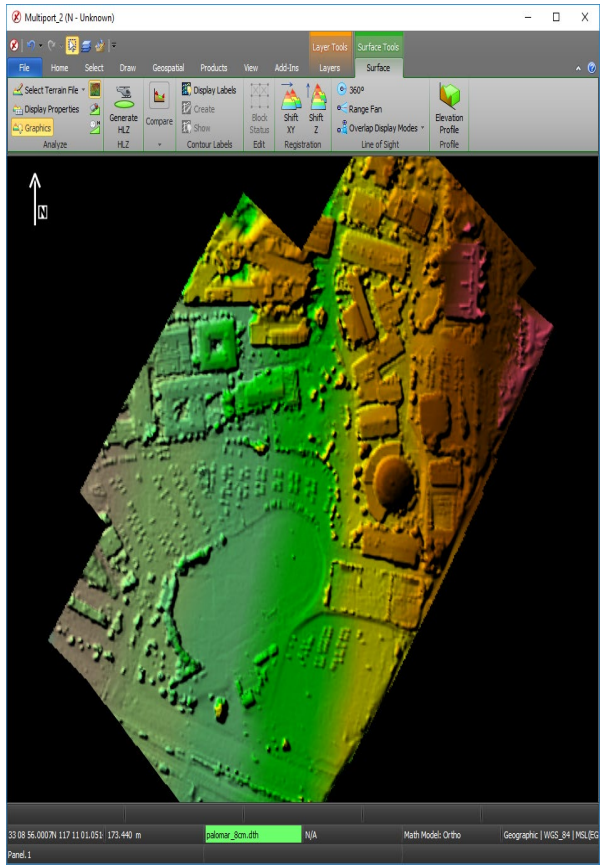
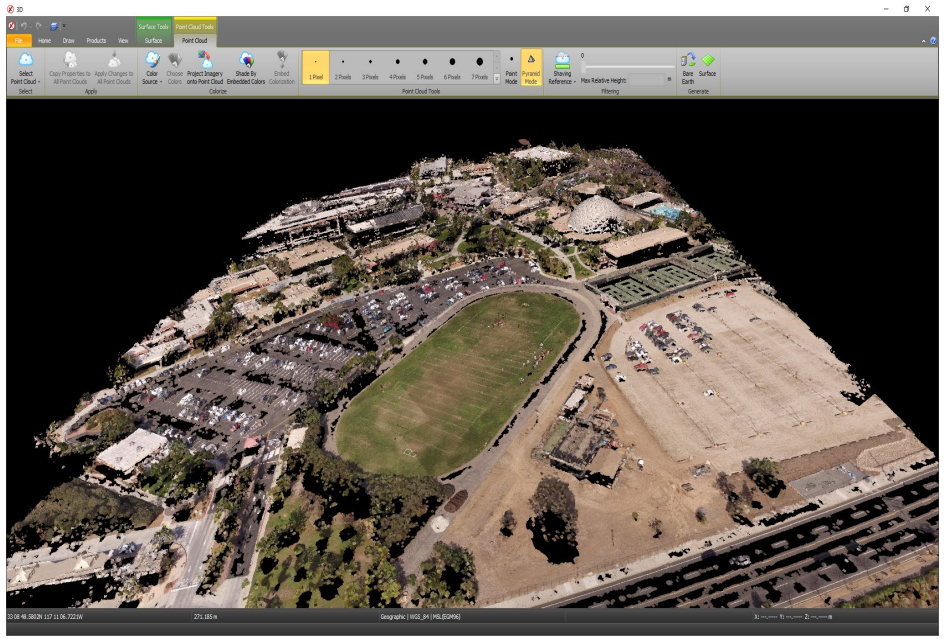
UAV processing results

Output options include rigorous support files, orthomosaics, surface terrain models, bare earth terrain models, and 3-D point clouds.







Imagery courtesy of Palomar College.

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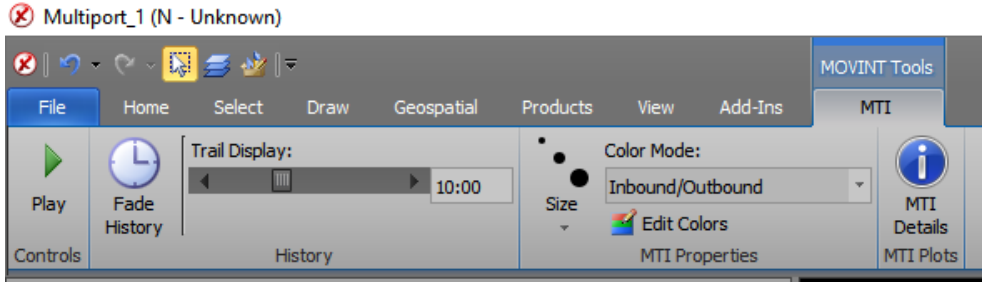
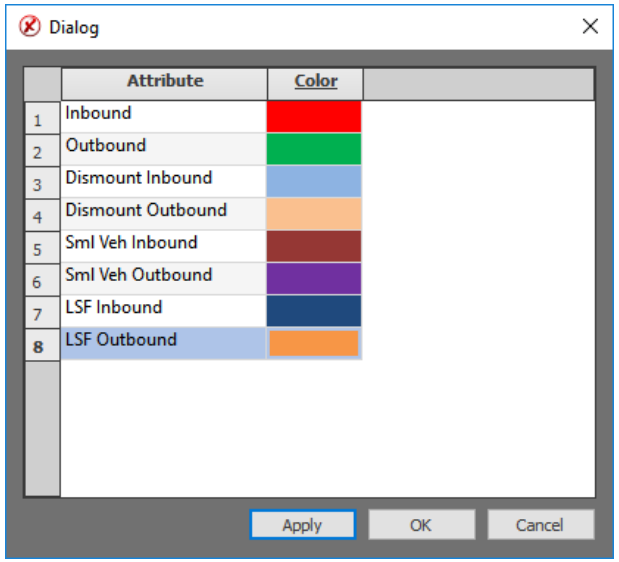
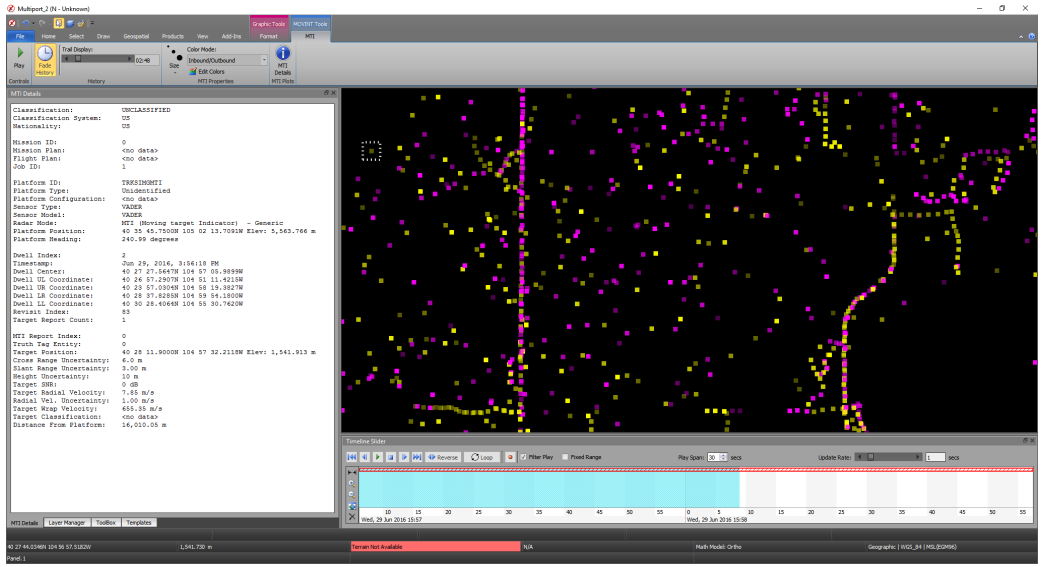
GMTI exploitation updates

New GMTI Ribbon includes new analysis and visualization tools.



- Colorize detections based on age, platform, or inbound / outbound status
- Control trail display during animation to distinguish older detections
- View individual point metadata using a convenient dockable window





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Visualize STANAG 4676 Edition B

- Track visualization ingest STANAG 4676 Edition B natively
- Graphical attributes controlled with a style sheet
- Start/End of track displayed as green/red
- Time animation of tracks using time attribution
- Turn on/off points
- Display track error ellipses on/off

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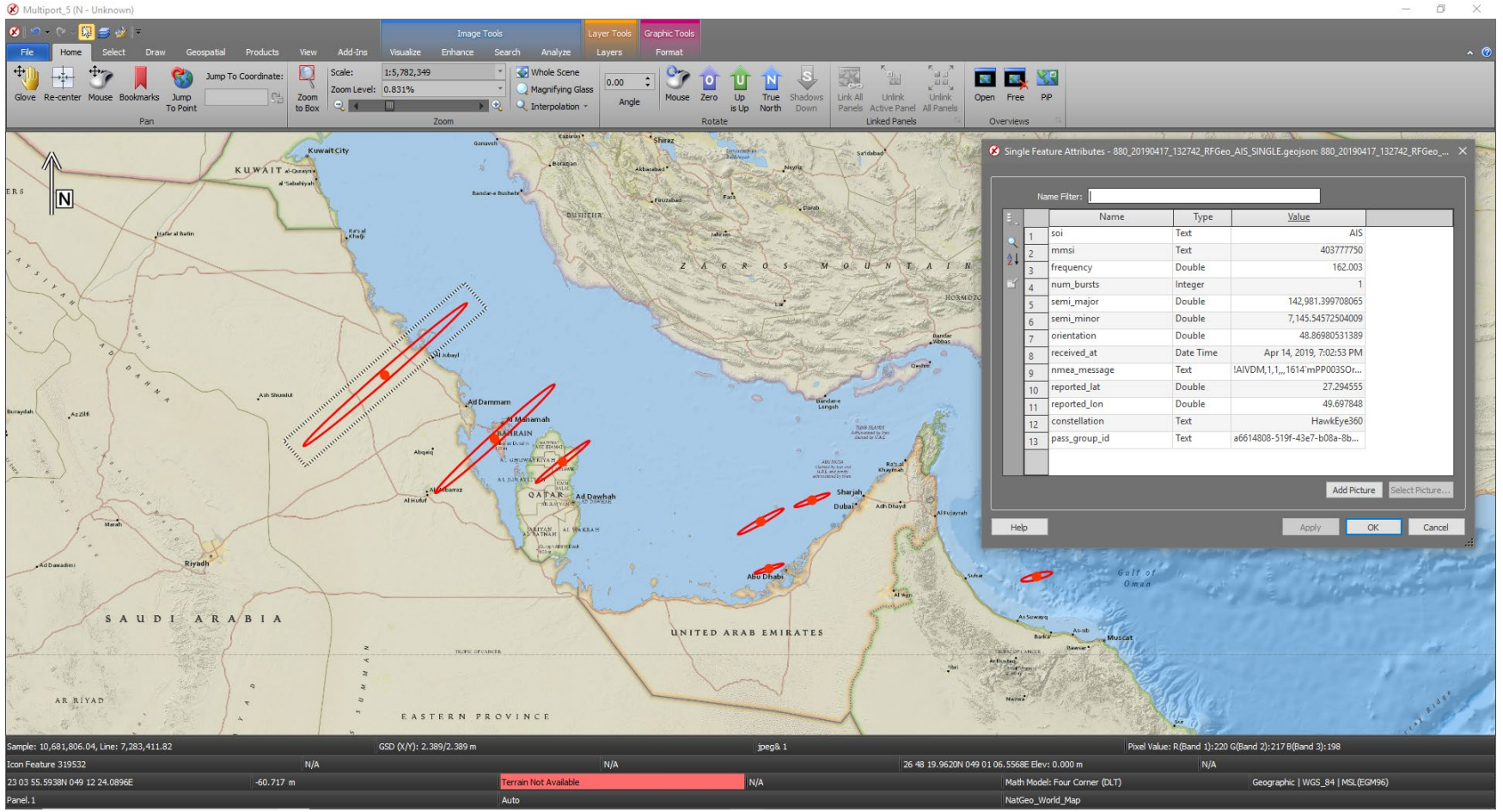
Signals Intelligence (SIGINT)

- Ingest Native Hawkeye 360 GeoJSON and Tactical SIGINT Data Format (TSDF)
- Attributed features with error ellipses, location, time, orientation, etc.
- Animation using time attributes
- Turn on/off error ellipses



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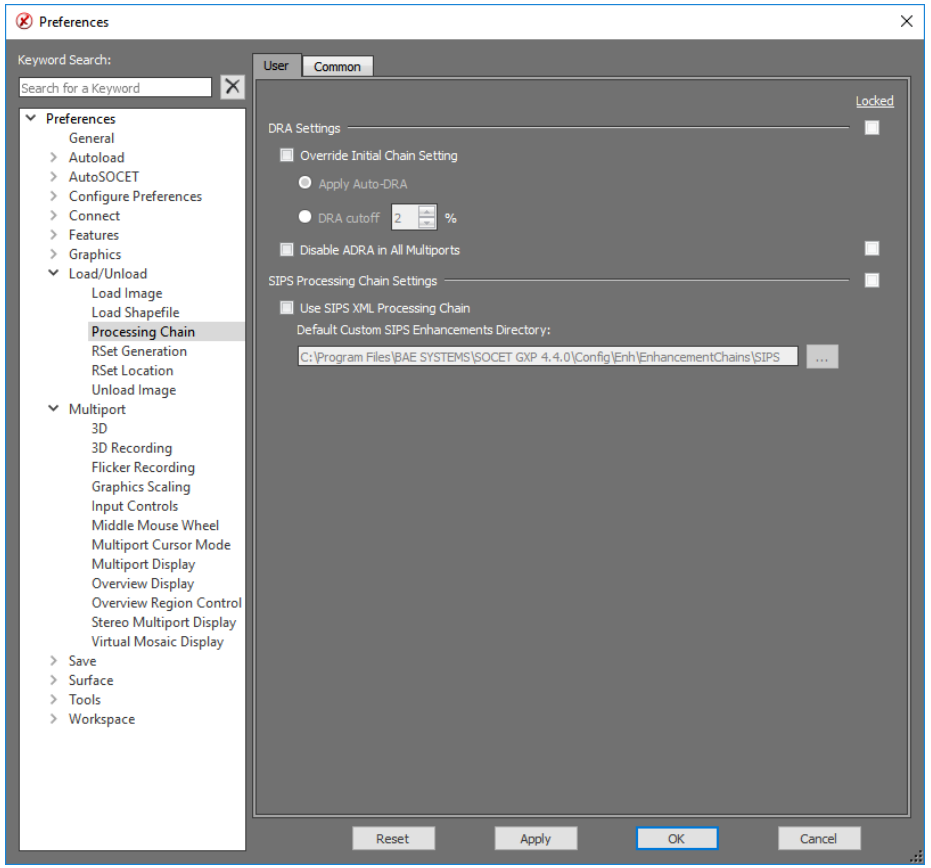
Software Image Processing Standards (SIPS) updates

Optionally utilize SIPS XML files to determine initial image display settings.
SOCET GXP v4.4.0.6 updated to SIPS 2.4.13a.



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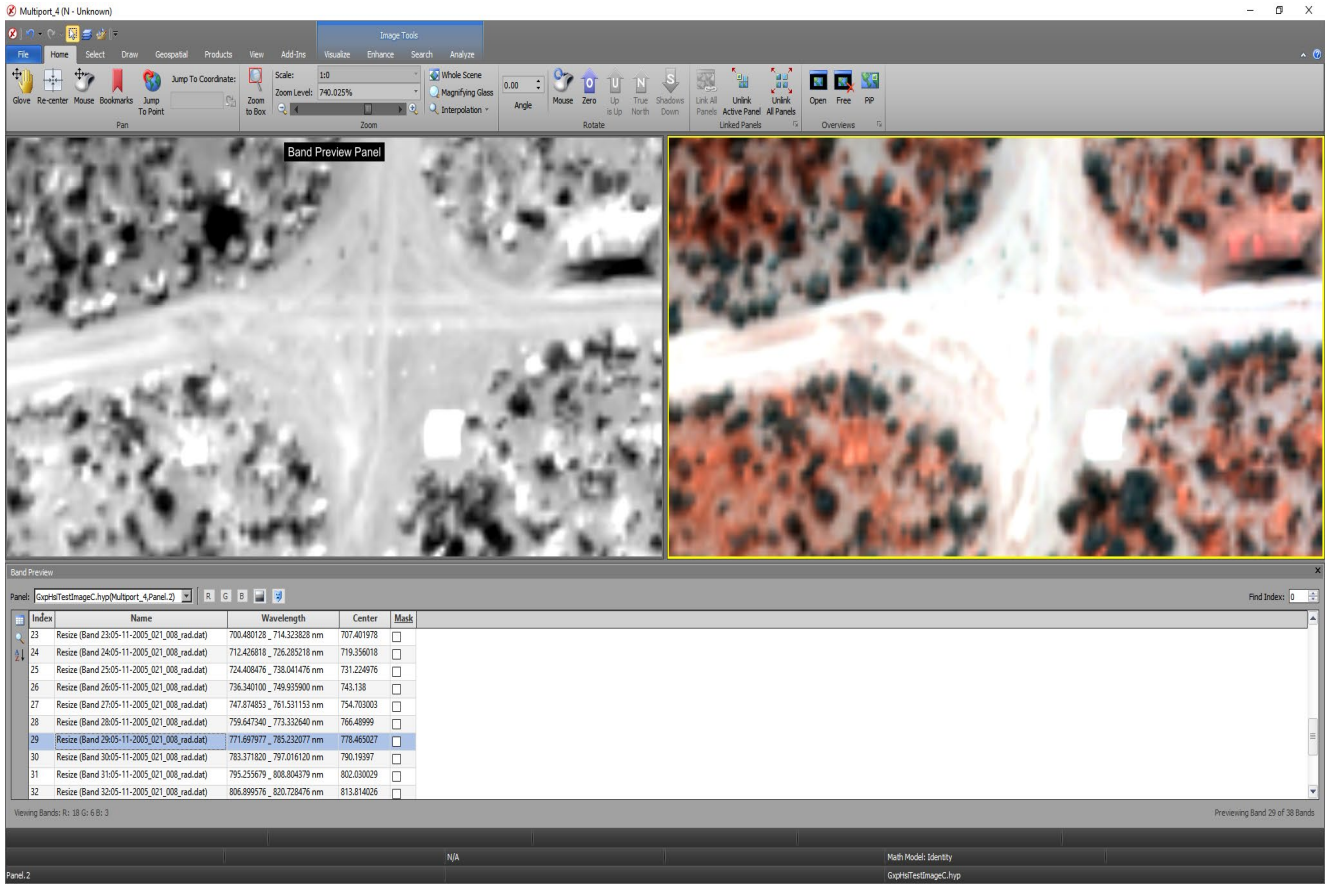
Band Preview

Quickly preview all bands contained within a multi-band image to allow viewing of signature changes across wavelengths.



- Table shows all available bands along with metadata about each band
- Quickly assign bands to color channels or mask problematic bands
- Users can use arrow keys to rapidly switch between bands and see a preview of that band in the left-hand panel

Imagery courtesy of BAE Systems Advanced Technology Centre, UK.

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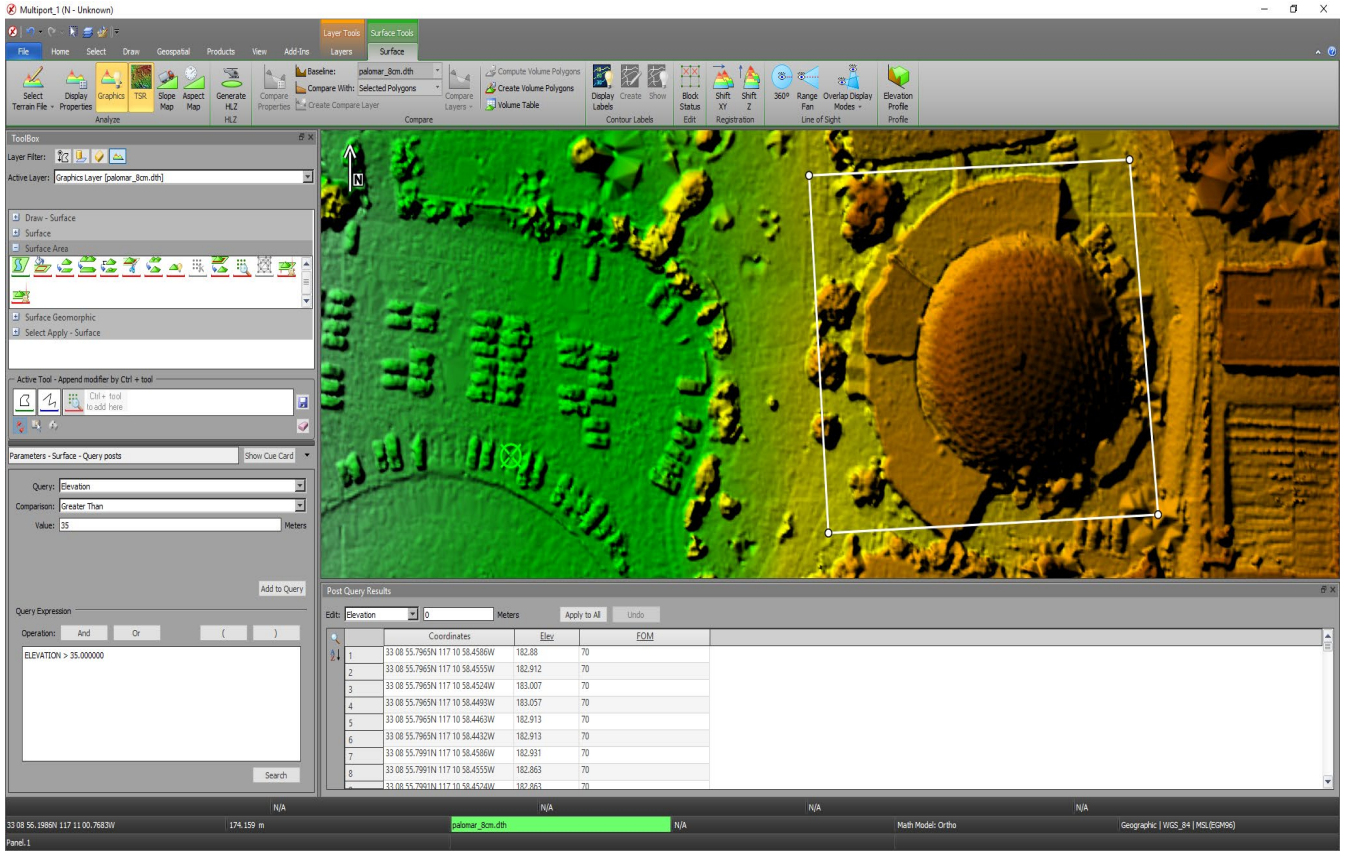
Post Query Tool

Easily identify and interactively edit grid terrain posts based on elevation information or Figure of Merit (FOM) values.



Imagery courtesy of Maxar.

- Quickly allows for searching of terrain posts in grid terrain files
- Queries can be run based on FOM value, elevation, elevation change, and average delta elevation
- Complex queries can be created
- Table shows all posts that match the query
- Values can be edited directly in the table
- Export directly to a new terrain file
- Grid Post Viewer tool allows users to review and share query results

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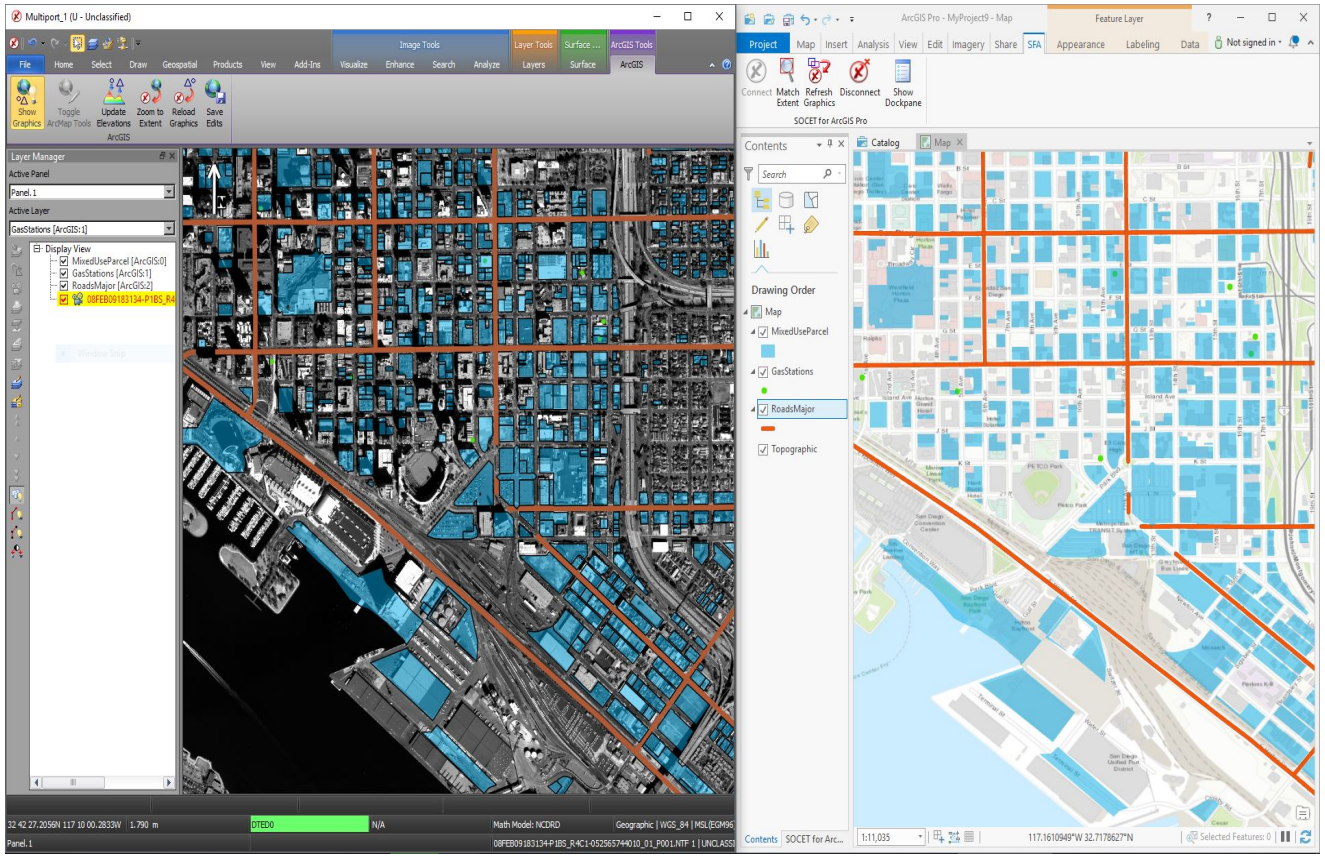
Integration with ArcGIS® Pro
SOCET for ArcGIS (SFA) or Spatially Enabled Exploitation (SEE)

Connect SOCET GXP and ArcGIS Pro to enable feature collection workflows across both applications with SFA.
Connect SOCET GXP with Esri® databases without ArcGIS Pro UI with SEE.



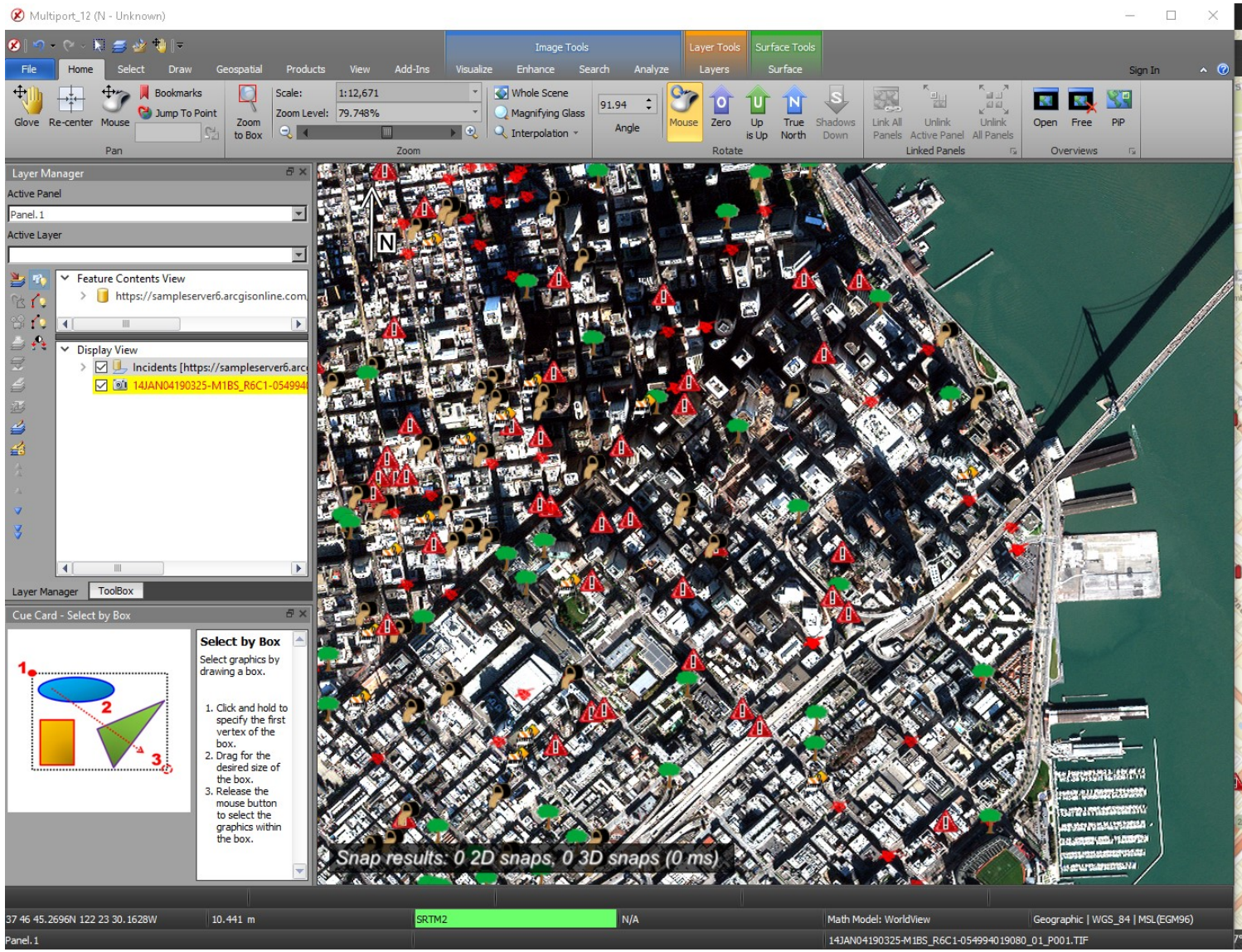
Imagery courtesy of Maxar.

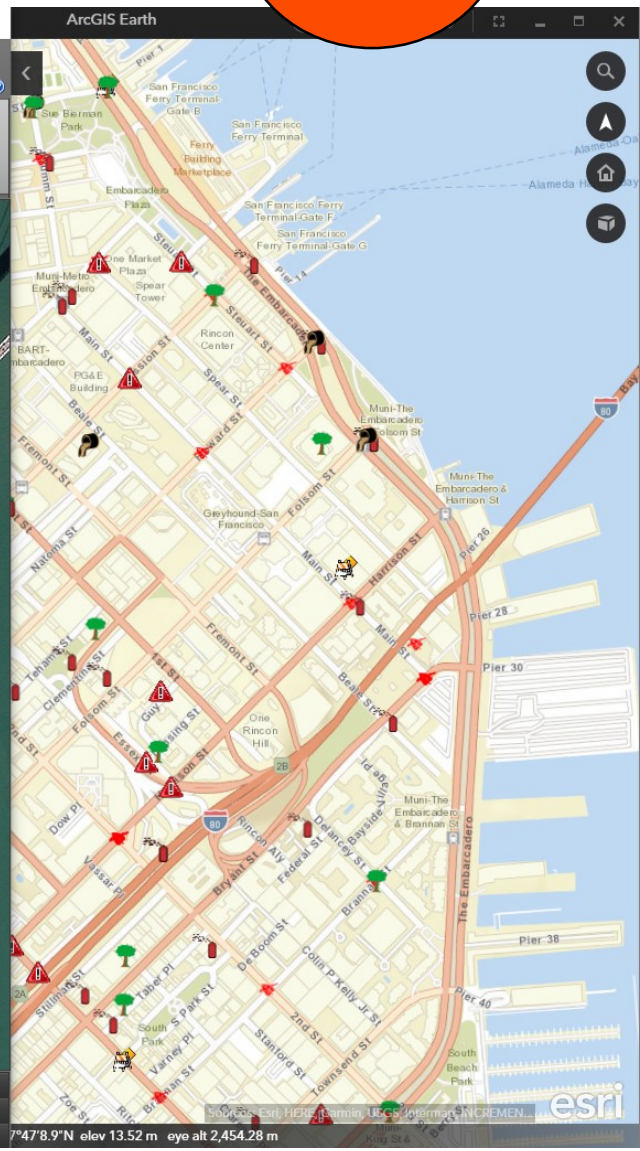
- Extract features in SOCET GXP to take advantage of best in class accuracy, stereo viewing, mensuration, and 3D extraction tools
- Utilize editing tools and other GIS extensions in ArcGIS Pro
- SOCET GXP compatibility with ArcGIS Pro v2.5+ add ins
  - Includes support Multipatch
  - Performance improvements for AOI graphics clipping
- Incremental loading of Esri feature service data in the SOCET GXP Multiport

Integration of Esri's Feature Service for point symbols

New for v4.4.1.3

Symbols look the same in Esri ArcGIS as they do in a SOCET GXP Multiport!



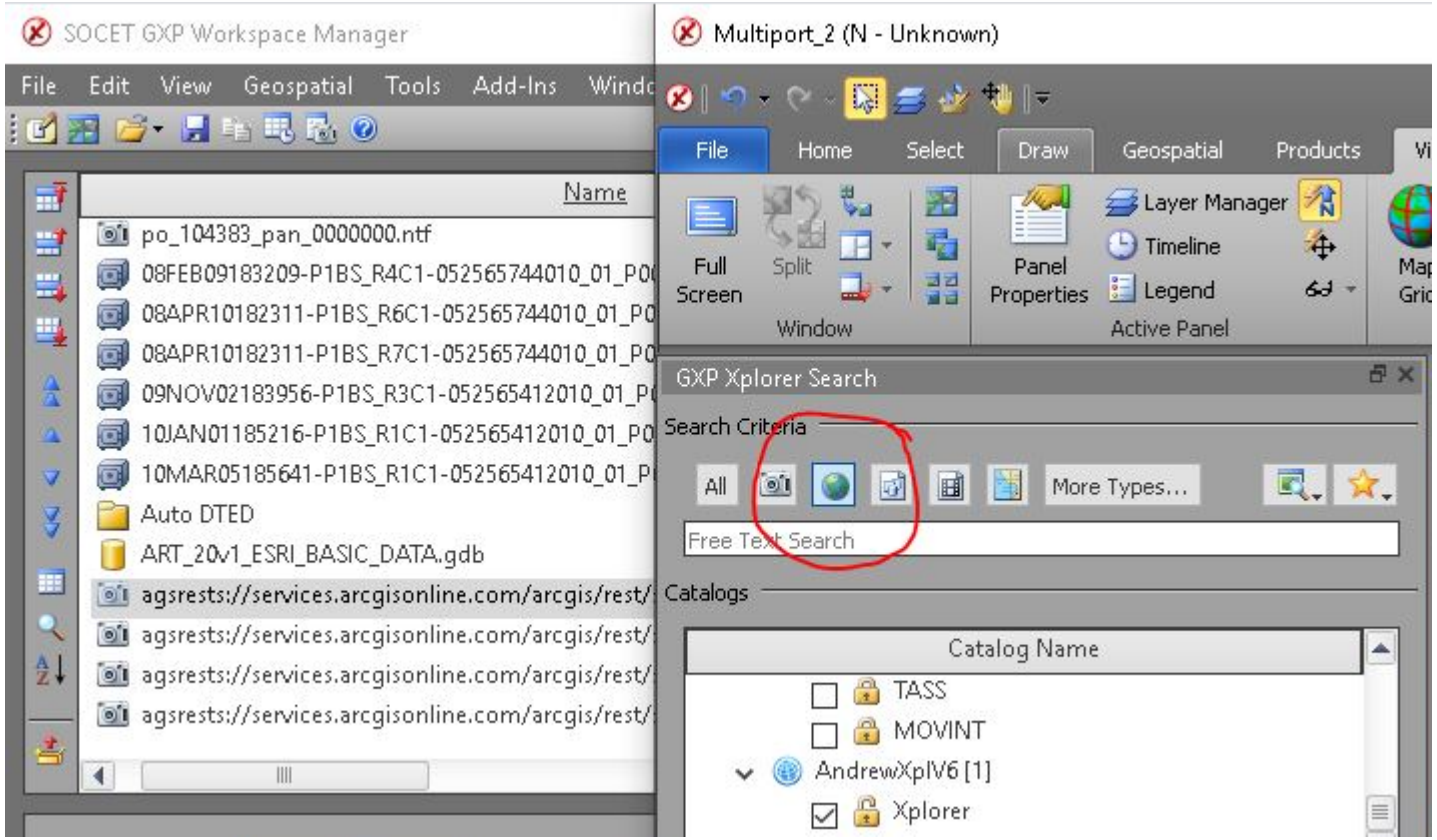


Imagery courtesy of Maxar.

Integration Esri Services cataloged in GXP Xplorer Platform

New for v4.4.1.3

- The WIM has been updated to search Esri Map Servers cataloged by GXP Xplorer
- Updates include authentication for Esri hosted services



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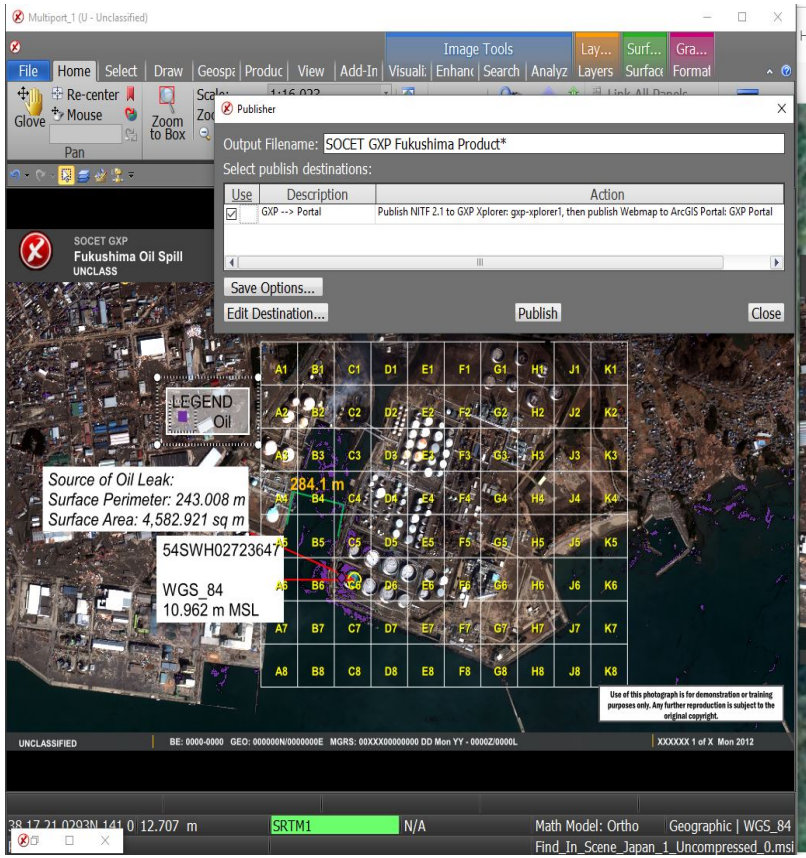
Publish to ArcGIS Enterprise portal

Publish products created in SOCET GXP directly to ArcGIS Enterprise portal.



- Utilize GXP Xplorer to re-host local images used in product creation
- Add in optional base maps as a background
- Directly link back to GXP WebView from ArcGIS Enterprise portal for product editing

Imagery courtesy of Maxar.

BAE SYSTEMS

Feature Extraction

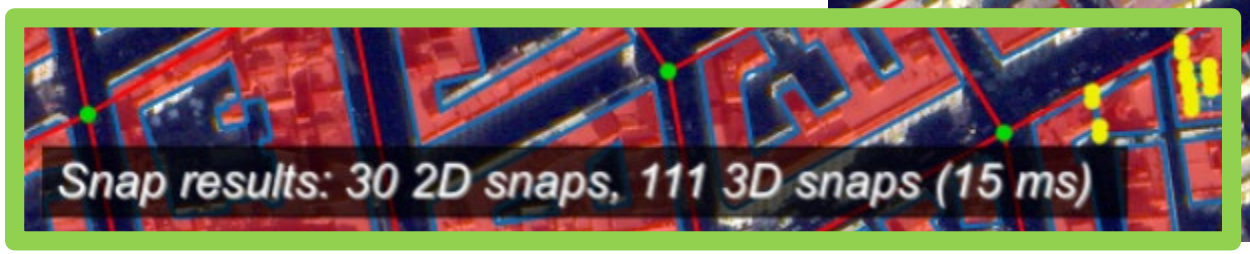
Enhancements for accuracy in collection and edit

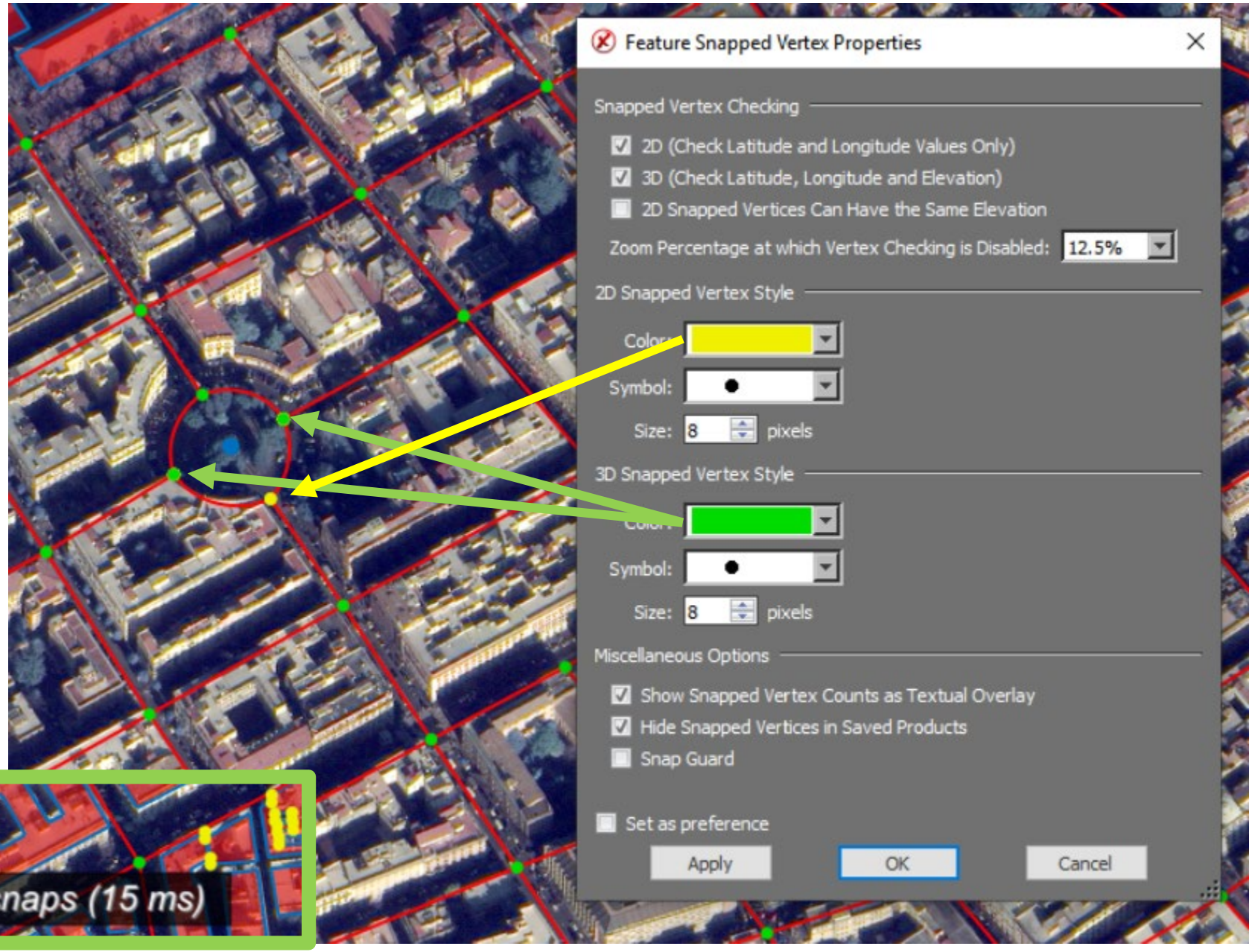
- Snap Guard
  - On/off warning for breaking a snap when moving a vertex
- New preference for selecting and moving features or feature vertex with a pixel tolerance for the optional move
- Indicator for snapping in 2D/3D

Feature Extraction …2

Topologic checks while editing and collecting features

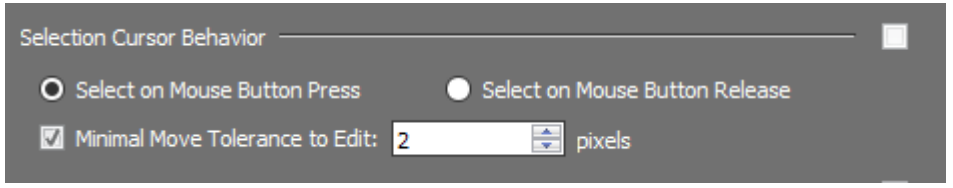
- Snap Check
  - Zoom scale setting for performance
  - Options for 2D/3D checks
    - Color, Symbol, Size
  - Text indicator for snaps

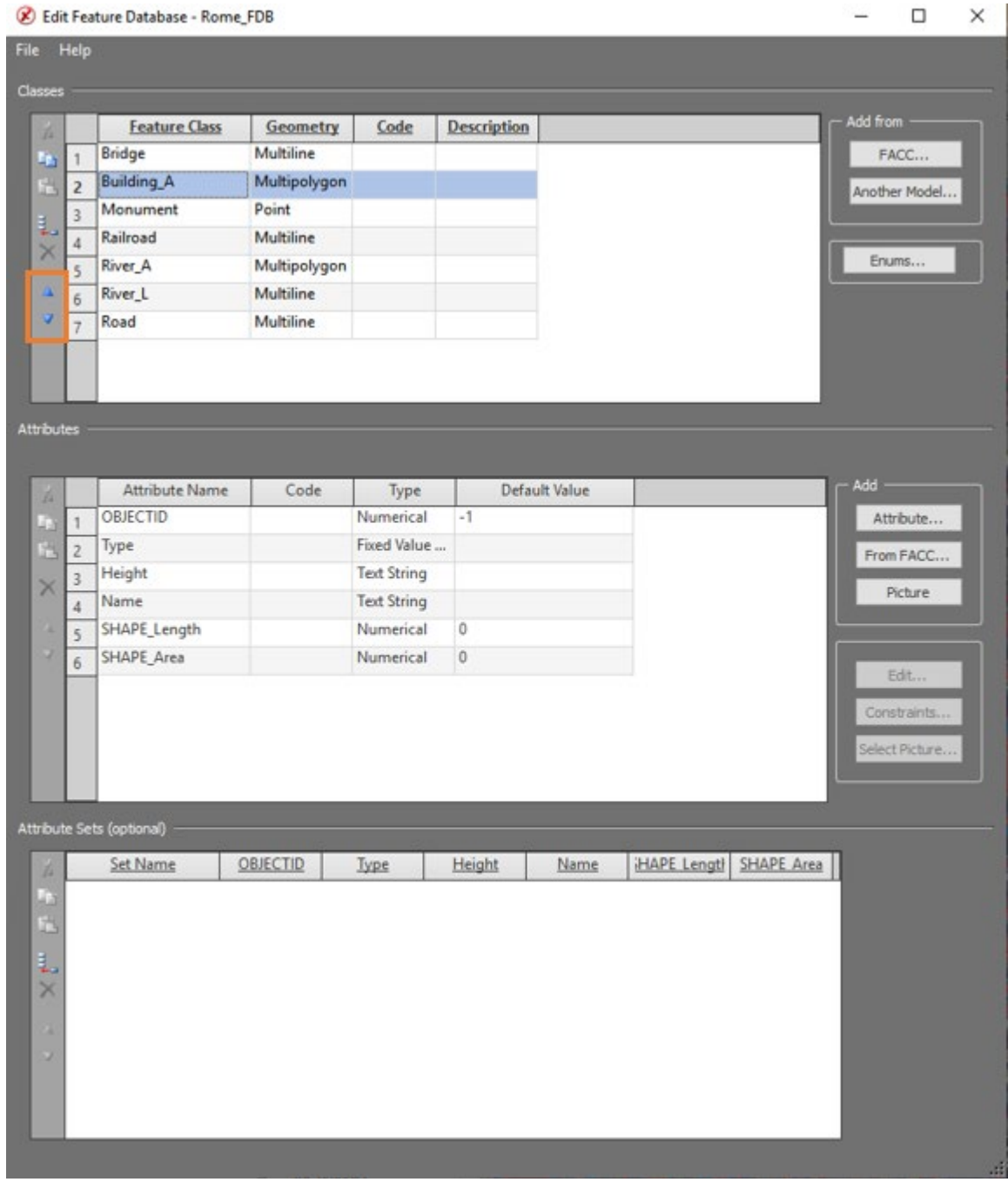




Feature Extraction …3

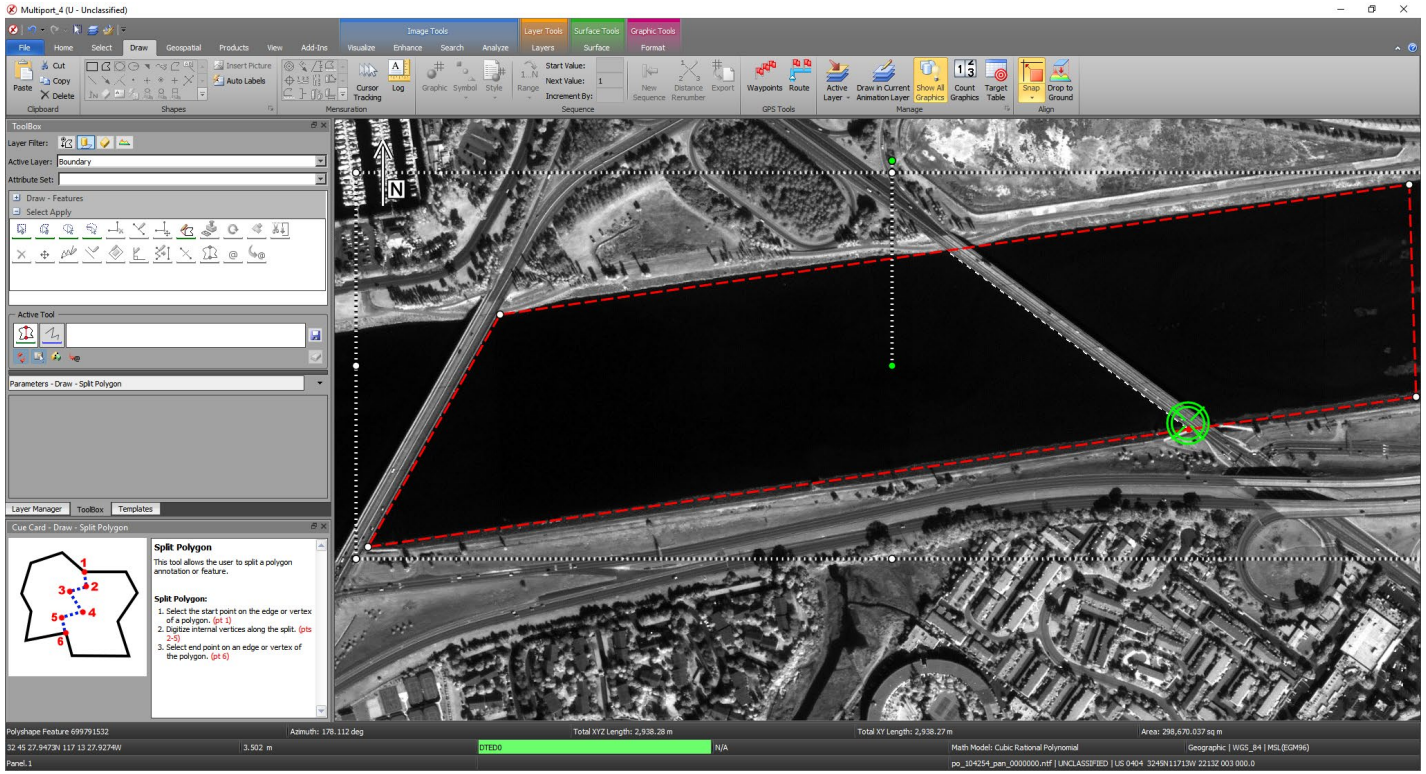
- Table management
  - Save column settings preferences for feature attribution
  - Provide enhancements for feature specification development including management of rows and enhancements to copy, paste, cut, and append
  - Constrained attribution stream lining attribute choices for given feature types
  - Support for multi-feature selection for display, sort and jump-to has been enhanced
- Feature editing improvements for the Reshape tool
- Add save-as options for KML from the Workspace Manager or Multiport to include edited KML files in SOCET GXP
- Trim and Extend tool now only alters the end point of the line being trimmed or extended

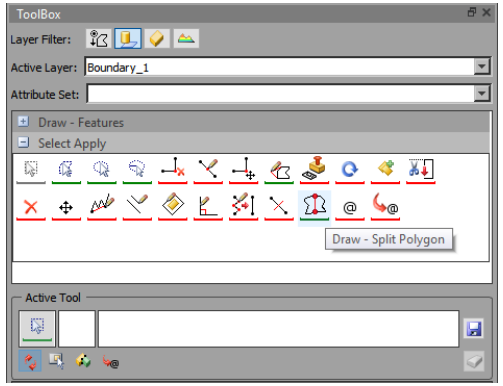


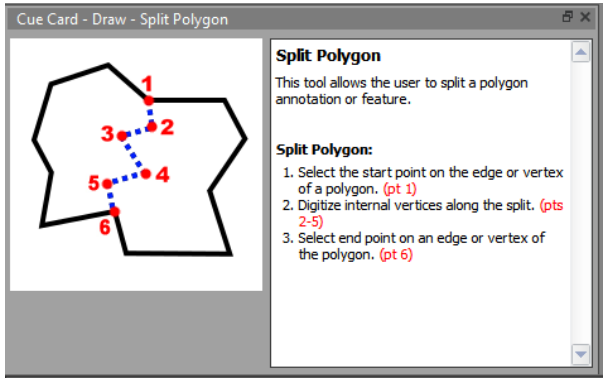


Feature Extraction …4

Split polygons during feature editing.







Imagery courtesy of Maxar.

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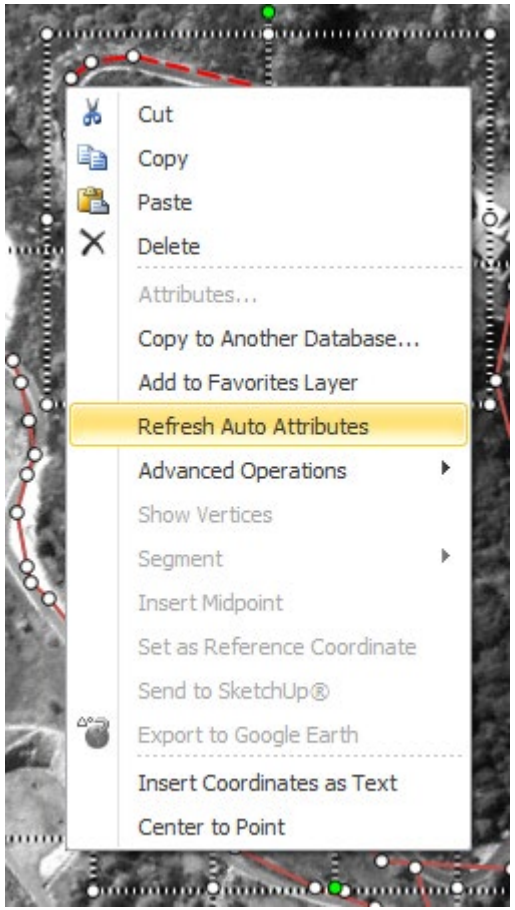
Feature Extraction …5

- Auto attribution now "refreshes" feature attributes with new values based on imagery metadata, system metadata, or any context sensitive auto attribution field
  - Applicable to SOM or Feature collection/edit
- Export and save feature attributes to CSV, Shapefiles, other from the feature attribute table for joined tables



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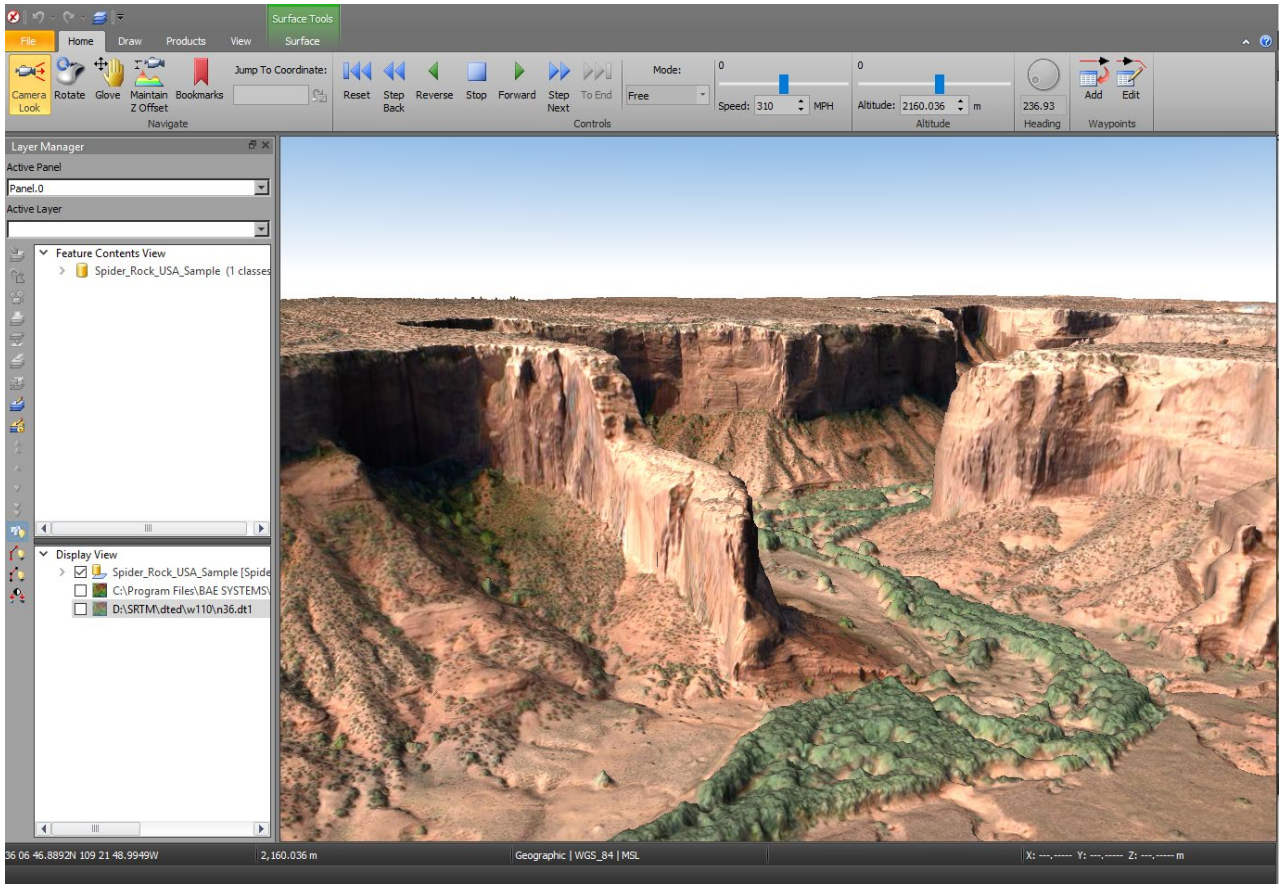
Cesium 3D Tiles® v1.0

New for v4.4.1.3

- Cesium 3D Tiles v1.0 is a format for highly detailed geospatial models adapted by the OGC® Cesium® https://cesium.com/3d-tiling-pipeline/
- SOCET GXP provides support for allowing visualization, roaming, fly-through in the SOCET GXP 3D Multiport



Imagery courtesy of Vricon.

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New for v4.4.1.3

Imagery courtesy of Vricon.

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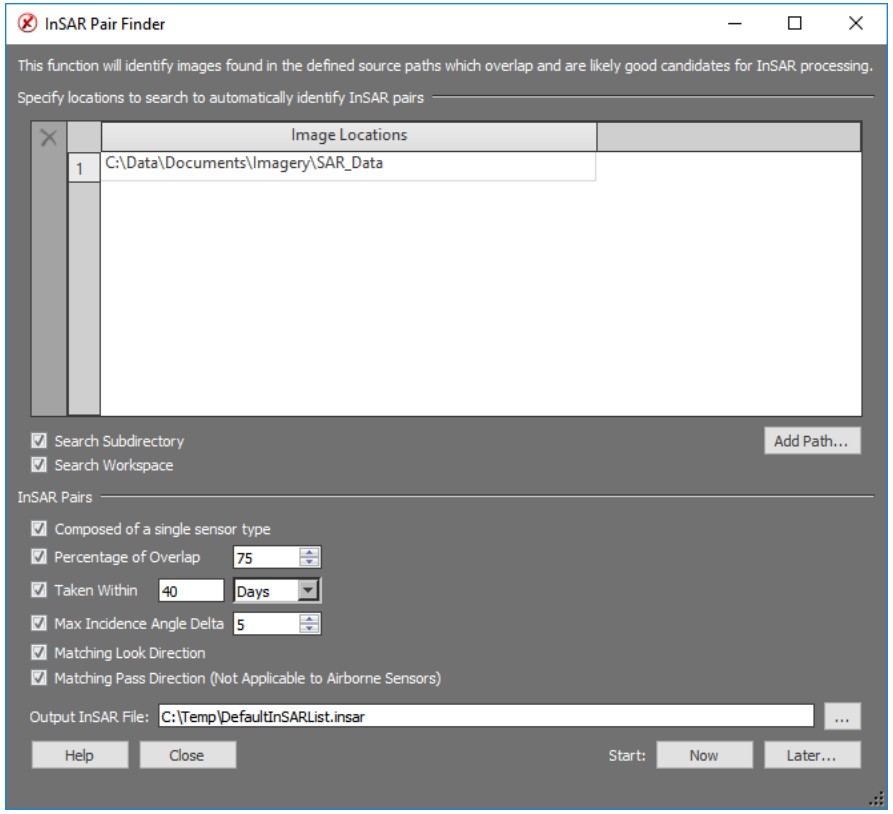
Interferometric Pair Finder and Coherent Change Detection

New tool for identifying interferometric pairs suitable for coherent change detection processing.



- Search a directory of Synthetic Aperture Radar (SAR) images or loaded images in the Workspace Manager
- Customize search parameters based on collection geometry requirements
  - Sensor type
  - Percentage overlap
  - Time between collects
  - Incidence angle delta
  - Look direction
  - Pass direction (satellite only)
- Flat Earth Correction can now be toggled during Coherent Change Detection processing

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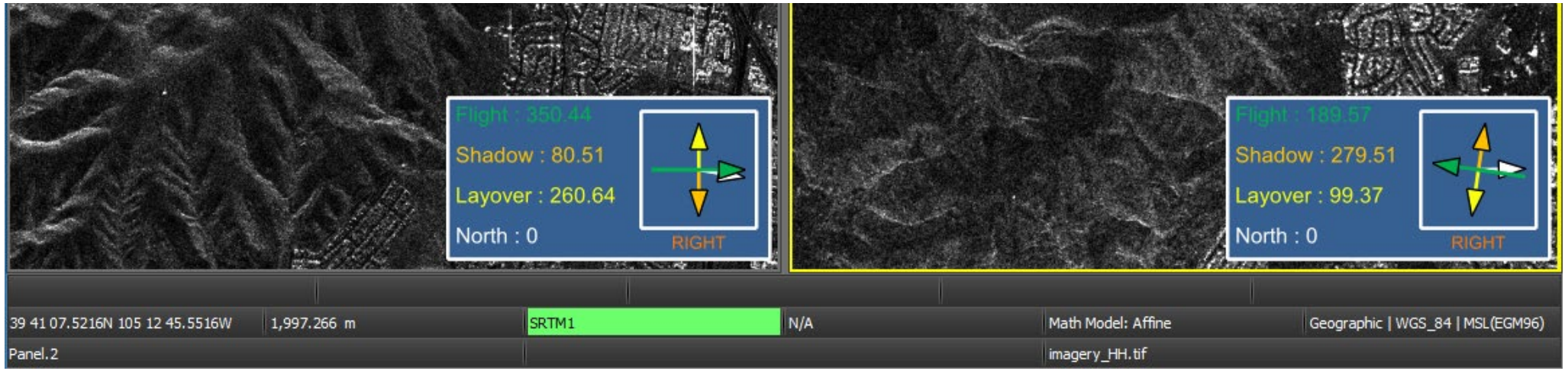
SAR Overlay updates

Legend showing relevant collection geometry for SAR images.

- New angles have been added for contextual awareness
- North arrow
- Layover angle
- Right or Left side looking
- Text angles are now in reference to ground space relative to North



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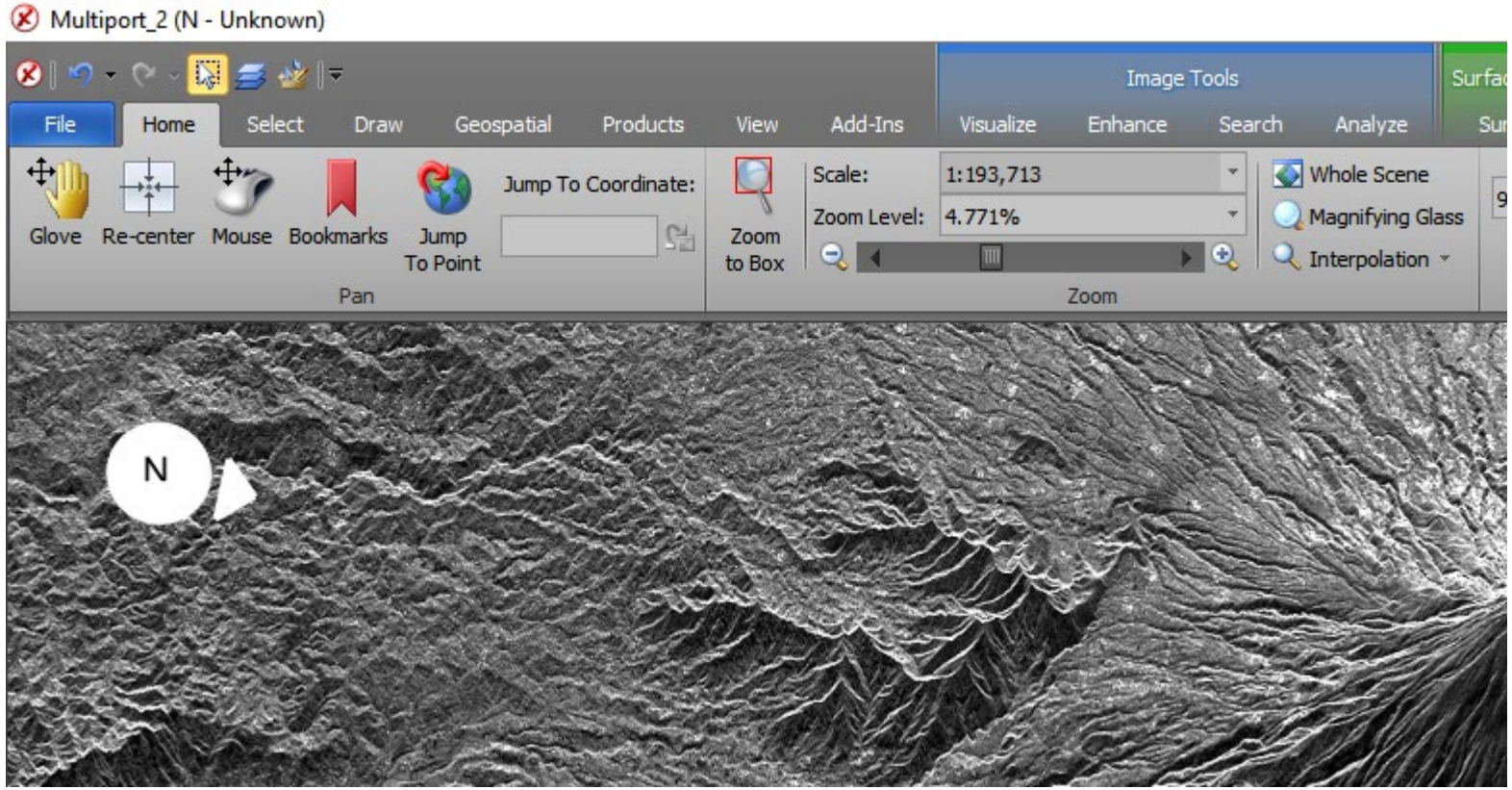
New North arrow

New North arrow can be added as a default preference or drawn manually.



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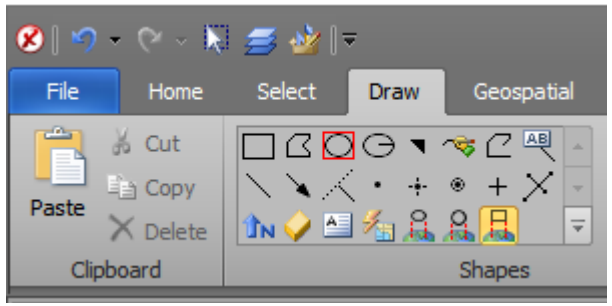
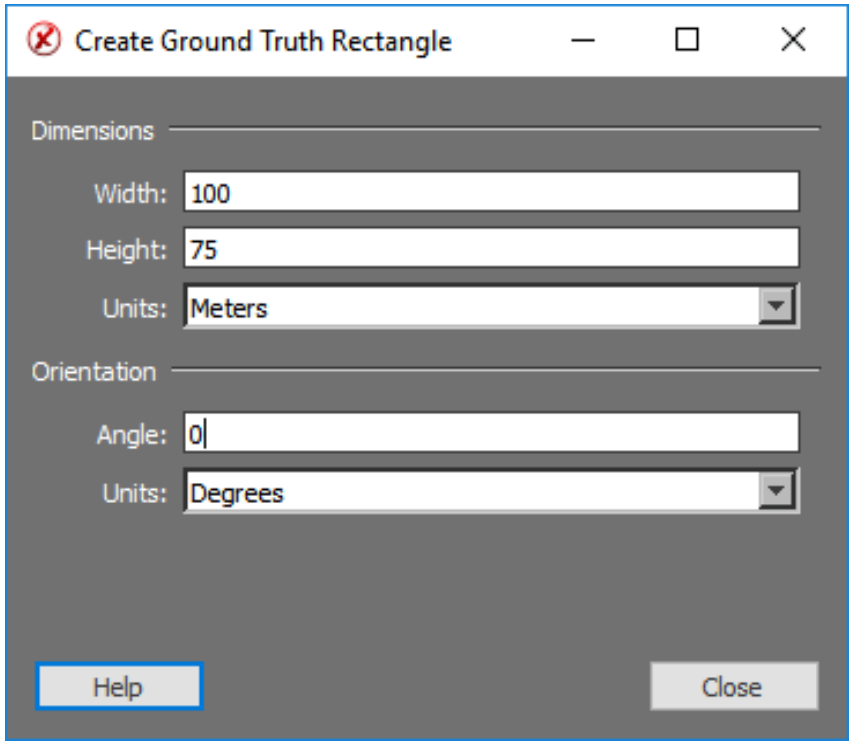
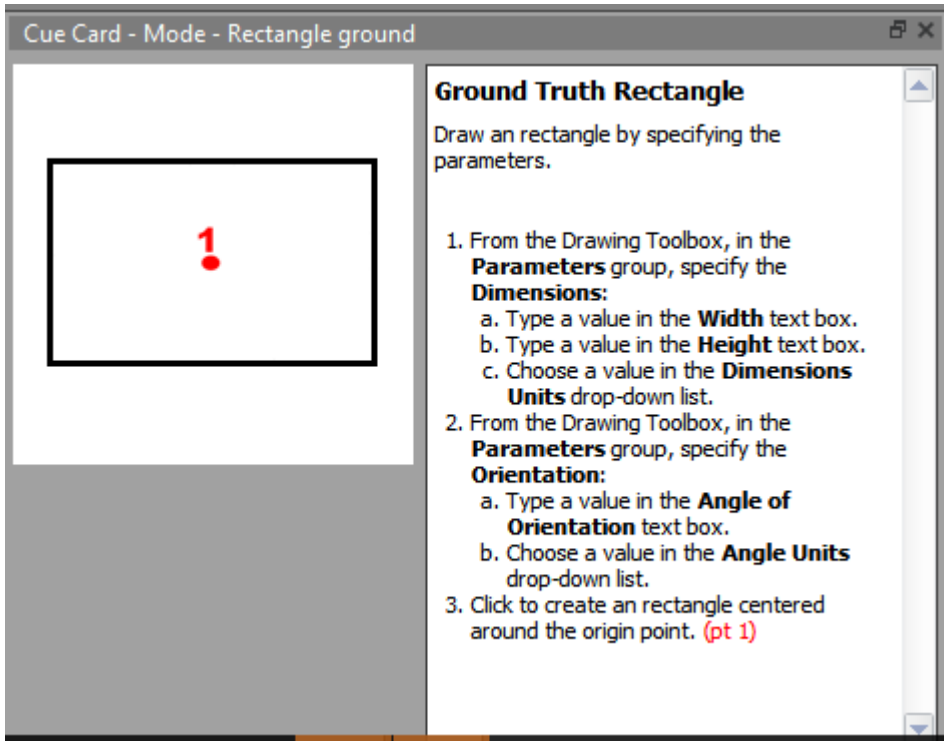
Ground Truth Rectangle

Set user defined rectangles in ground space using width, height, and rotation.







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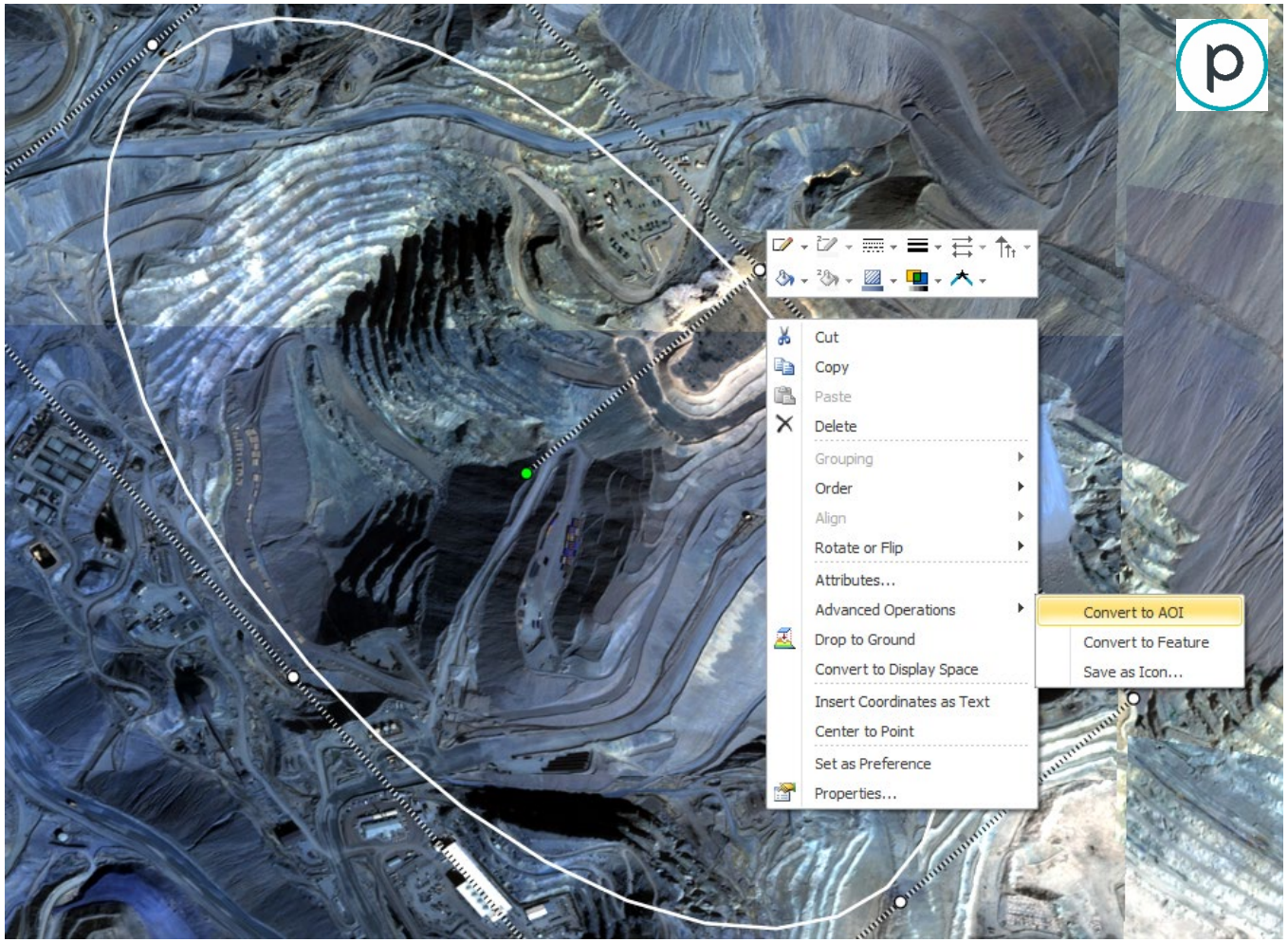
Ground Truth Graphics to Area of Interest (AOI)

Convert ground truth graphics into an AOI for advanced selection and operations.



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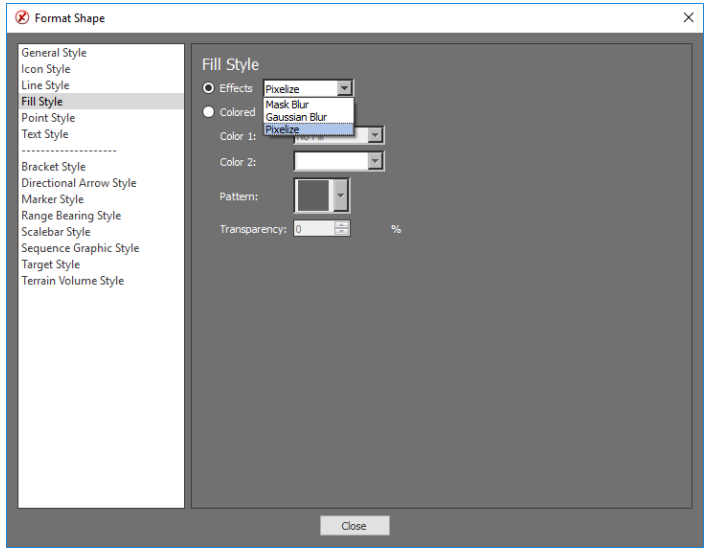
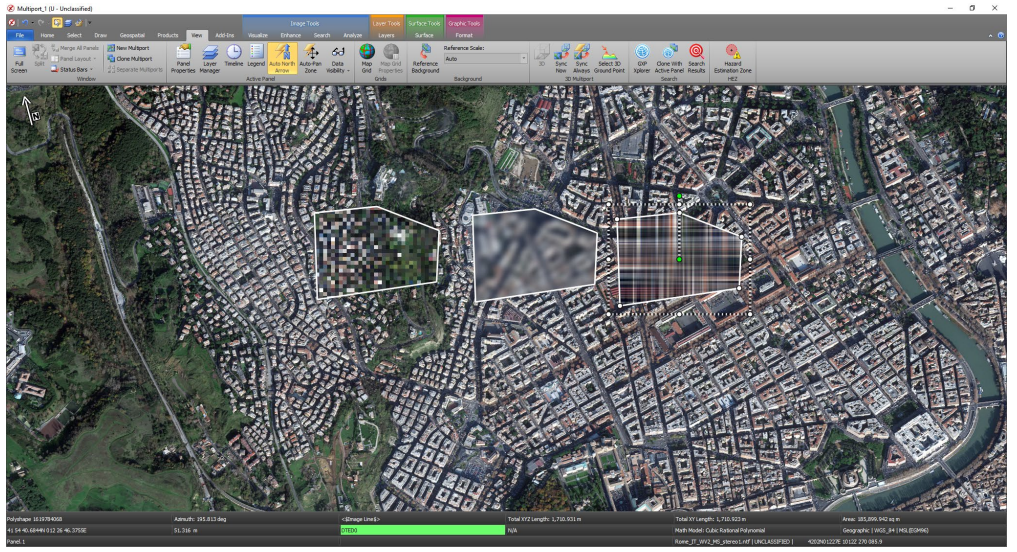
Redaction Polygons

New fill effects for polygons allow for blurring of pixels.

- Three different blur effects:
  - Mask
  - Gaussian
  - Pixelate





Imagery courtesy of Maxar.

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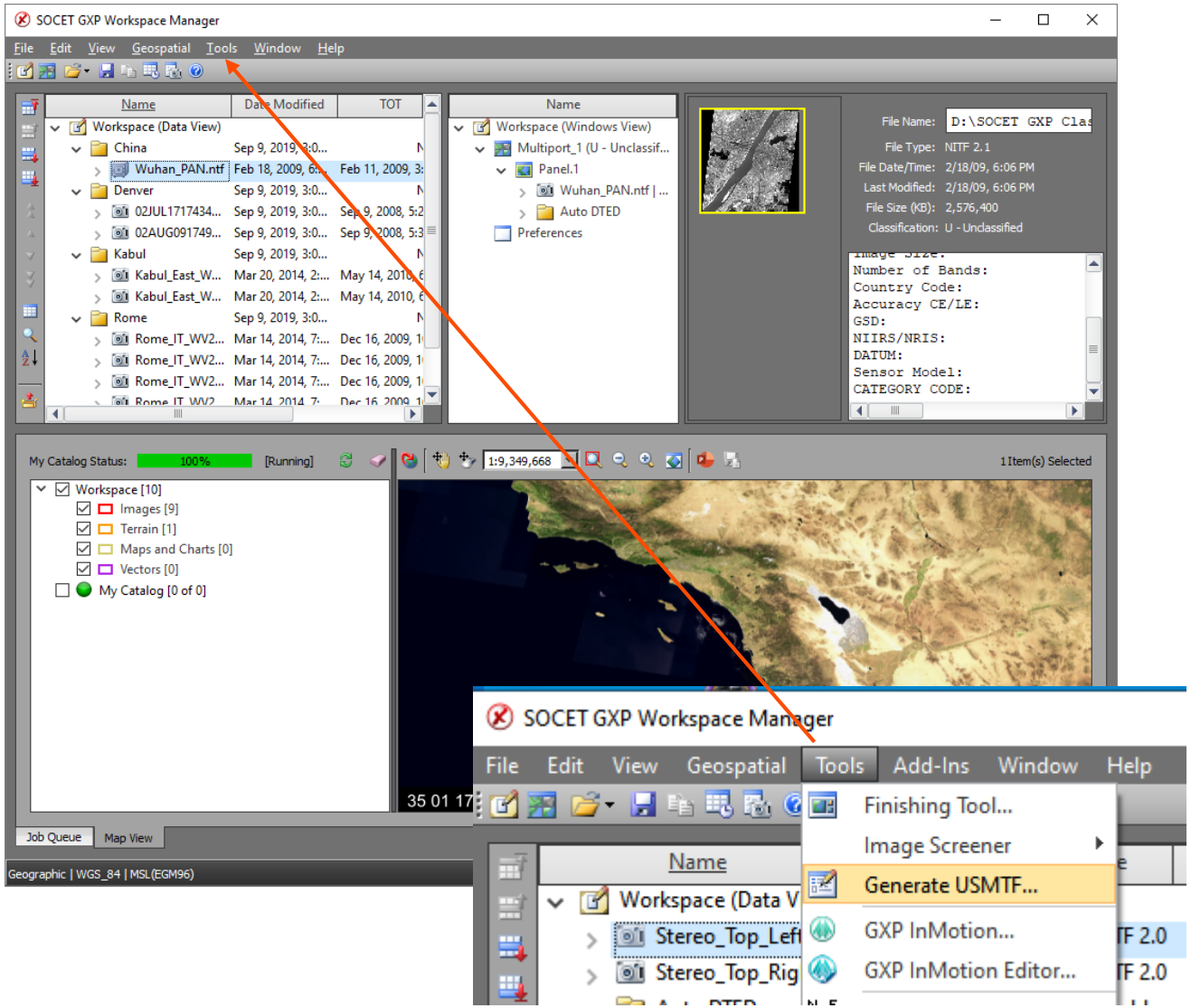
United States Message Text Format - USMTF Generation

- Create USMTF Messages using information derived from Imagery loaded into a Multiport
- Transmit USMTF messages via interaction with the Common Message Processor (CMP) and the GTCS systems
- The text message is created using image metadata and interactive graphics to auto-fill the USMTF with as many fields as possible
- An XML schema template is provided, which can be customized for specific messaging requirements



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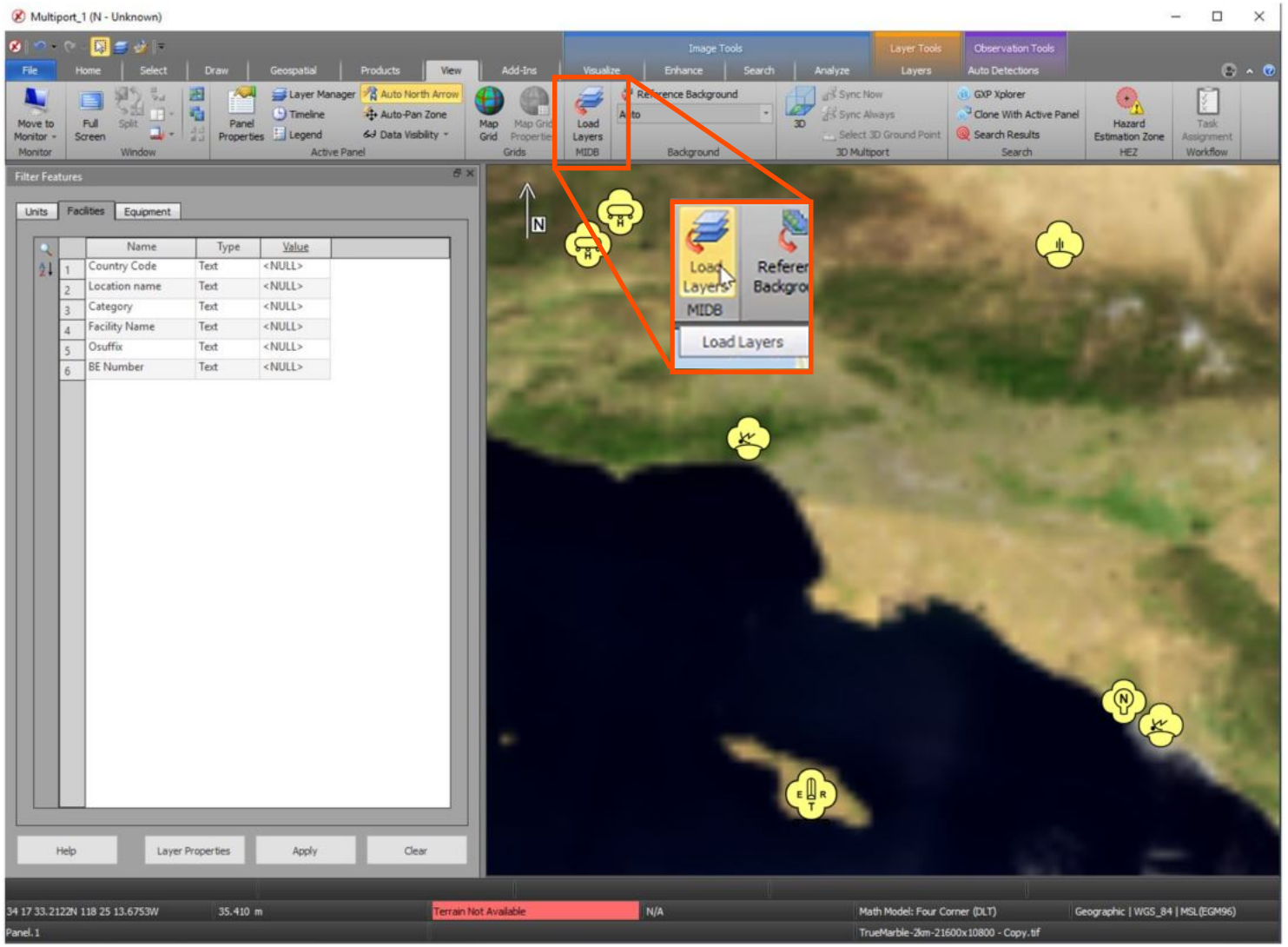
Modernized Intelligence Database (MIDB) Integration

New for v4.4.1.3

- GXP Xplorer Platform Integration
  - Data model updates including MIL-STD 2525B symbols
  - New SOCET GXP Ribbon connection for MIDB
- Updated layer manager to include content filters based on attribution
- Switch between MIL-STD 2525B symbols and customer, or simple symbols



GXP Automated Tools for Object Recognition (GATOR)

New for v4.4.1.3

- Software developed under a Research & Development (R&D) program
- Productized as a SOCET GXP Job service
- Identifies objects over a Region of Interest (ROI) based on the selection of a 3-D model

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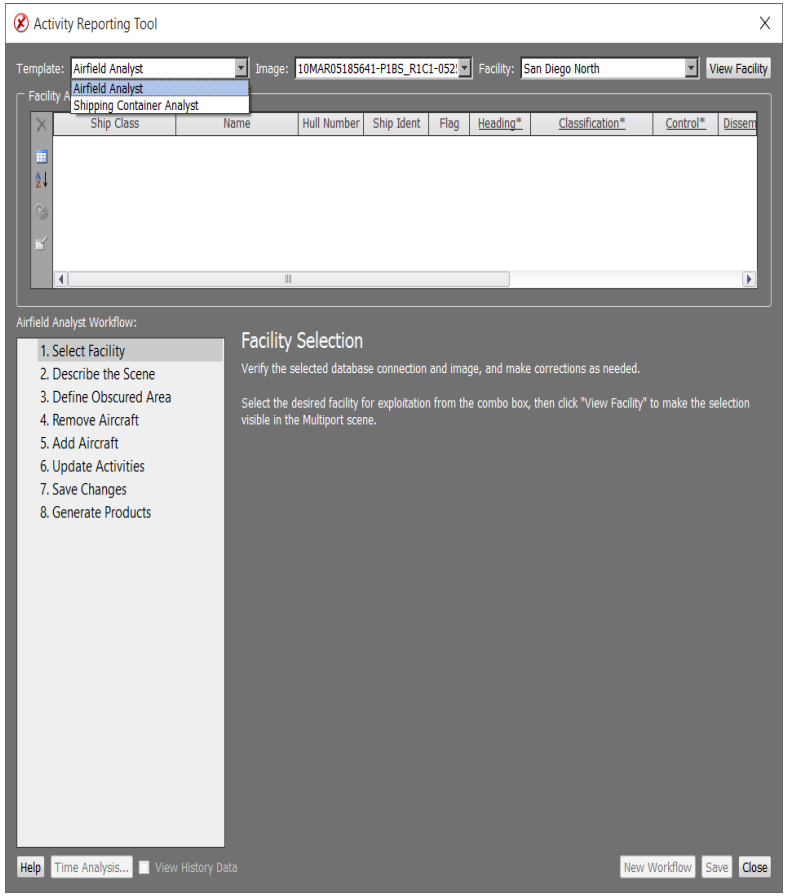
Other significant enhancements

- Users can now revisit facilities in the Activity Reporting Tool (ART) allowing for quality control workflows directly in SOCET GXP
- Users can now stream data from a Coalition Shared Database (CSD) catalog plug-in in GXP Xplorer directly to SOCET GXP using the Workflow Improvement Module (WIM)
- Tracks from Tracking Analytics Software Suite (TASS) can now be saved as KML directly from the SOCET GXP Multiport
- EXIF coordinate population during JPEG saves can be toggled in Preferences
- AOI can now be used as an input to our OpenFlight export
- Graphics can now be scaled based on Windows scaling factors
- SOCET GXP can now connect to hosted Esri Feature Services
- Utilizing a MXD for symbology on a feature database that contains feature class aliases now works
- Users can customize any time value displays to be a 24-hour format
- Minimum and maximum values are calculated and displayed when loading any terrain file
- Geographic terrain files now display post spacing in both seconds and meters



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Other significant enhancements …2

- When loading a GeoTIFF terrain with missing coordinate system info, a co-located .cs file is created so the file may load immediately
- When generating grid terrain files or utilizing Terrain Operations, the output boundary coordinates can be moved to evenly spaced posts
- Users can now specify a configuration file to use when exporting Triangulated Irregular Network (TIN) terrain to ASCII
- New terrain editing algorithms
  - First Order Fill Interpolation
  - Second Order Fill Interpolation
- LiDAR .las v1.4 is fully supported
- The ability to generate LiDAR intensity images has been added to the 3D Multiport Ribbon
- Coherent Change Detection now supports SICD and 2 band floating point images
- The Concentric Circles options for cursors will now allow for them to be calculated in ground space as opposed to average Ground Sample Distance (GSD)
- The Text with Line tool now allows endpoint styles to be selected
- *.ers files are now parsed for coordinate system information if they are co-located with JPG files opened in SOCET GXP
- SOCET GXP logging has been greatly improved and allows for much greater levels of customization

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Other significant enhancements …3

- The Porthole and Swiper tools now work with streamed images
- Corrected display of void areas in GeoTIFF terrain prior to terrain editing
- When batch importing shapefiles, allow all feature classes defined in the specification file to be created regardless of whether a corresponding shapefile exists
- Selected feature(s) in the feature attribute window (multiple features) are retained when sorting the table
- Setting what features are displayed in the feature attribute window (multiple features) is now saved as a hidden preference (All, Selected Only, All Displayed in Panel)
- When saving sequence graphics as a shapefile, the count is saved as an attribute (SeqNumber)
- GeoPackage Export now supports coded domains
- Better scaling of text on 4K monitors with Windows scaling factors at levels that aren't increments of 100 (150%, 250%, etc.)
- The Target Table can now report up to four additional coordinate systems as defined in Preferences
- MGRS coordinate preferences support 10-digit coordinates
- Allow searching in the Workspace Manager to roll forward from the bottom of the metadata back up to the top
- Remember the image color ramp colorization settings when closing and reopening the UI

Other significant enhancements …4

- Update Controlled Image Base (CIB)-like production to support the generation of Enhanced Controlled Image Base (eCIB)-like image tiles based on MIL-PREF-32466A
- Performance improvements for triangulation solve function
- Create GeoPackage export with or without imagery
- Support the shadow height tool for customer developed Community Sensor Models (CSM) add-ins for SOCET GXP
- Preference for the Image List Tool to not load images from an image container that have an identity sensor model
- Retain image enhancements for imagery in the Image List Tool when cycling through the images
- Create the complete set of eCIB products including the 10m product conforming to the government specifications

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API updates

- New methods:
  - **gxpGetElevAtXY(…)** – identifies an elevation value from a specified ground point XY and a loaded terrain file
  - **gxpSnapCursorToGround(…)** – snaps the cursor in a specified panel to ground
  - **gxpGroundIntersection(…)** – identifies a ground coordinate from a list of at least two input images and associated image points
  - **gxpGetGeoPointFromImagePointAndSeePointElevation(…)** – identifies a ground coordinate from an input image, a single image point, and a defined elevation
  - **gxpGetAllLoadedSupportImageFilenames(…)** – identifies a list of all support files loaded in the Workspace Manager
  - **gxpLoadFDB(…)** – allows a user to load a SOCET GXP Feature Database (FDB) into the Workspace Manager
- Other API changes:
  - Users can set auto pairwise rectification from the API
  - The following API methods now work with all flavors of Esri databases
    - gxpGetDatabaseSpecification(…), gxpAddFeatures(…), gxpDeleteFeatures(…), gxpUpdateFeatures(…), and gxpQueryFeatures(…)

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API updates …2

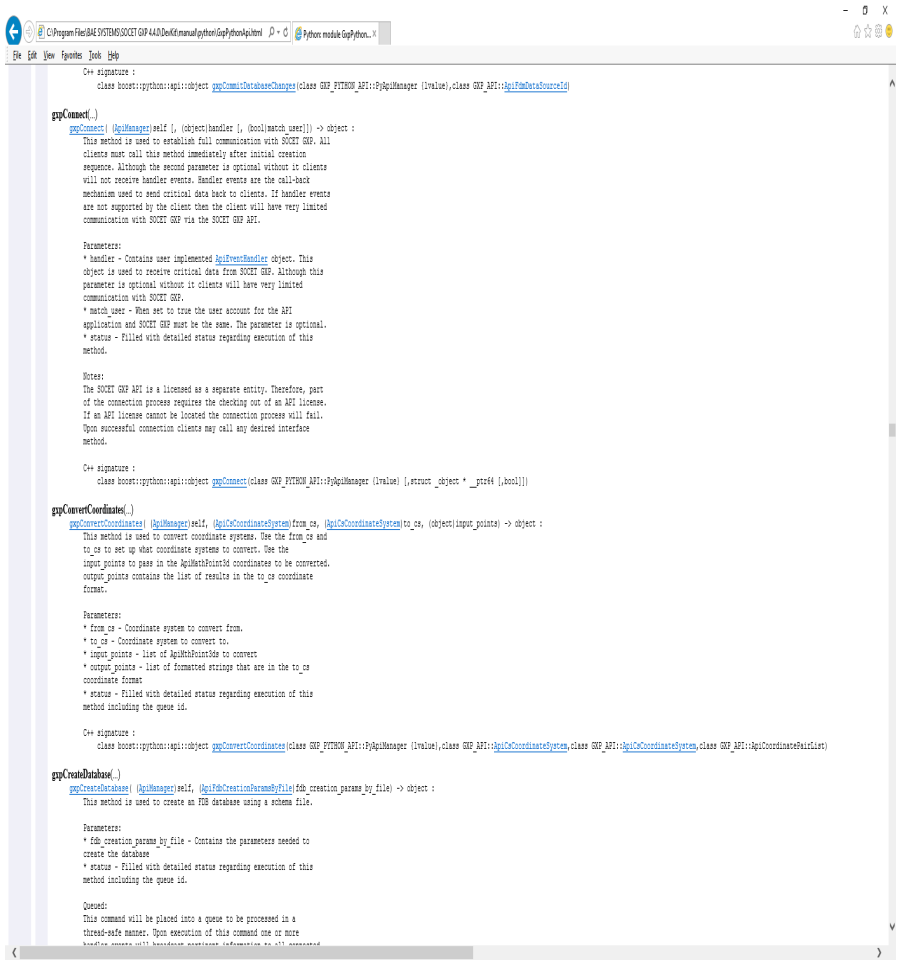
- New methods:
  - **gxpGetActiveWorkpacketId(…)** - retrieve the active workpacket ID for the Workspace
  - **gxpConnectToPrimaryXplorerServer(…)** - connect to the primary Xplorer defined in SOCET GXP preferences
  - **gxpDisconnectFromPrimaryXplorerServer(…)** - disconnect from the primary Xplorer server defined in SOCET GXP preferences
  - **gxpGetPrimaryXplorerToken(…)** - retrieve the token of the connected primary Xplorer defined in SOCET GXP preferences
  - **gxpGetGeoPointFromImagePoint(…)** - perform image to ground using image and terrain

API updates …3

- New events:
  - **PrimaryXplorerServerEvent(…)** - called by SOCET GXP when the primary GXP Xplorer server connection status is changed
    - The possible event types are:
      - API_XPL_NONE
      - API_XPL_NOT_DEFINED
      - API_XPL_NOT_CONNECTED_LOGIN_REQUIRED
      - API_XPL_TOKEN_EXPIRED_LOGIN_REQUIRED
      - API_XPL_NOT_ALIVE
      - API_XPL_CONNECTION_ERROR
      - API_XPL_CONNECTED_ANONYMOUS_LOGIN_REQUIRED
      - API_XPL_CONNECTED_PKI_CERTIFICATE_NO_SECURITY_TOKEN
      - API_XPL_CONNECTED_WITH_VALID_SECURITY_TOKEN
- Other API changes:
  - **gxpGetAllLoadedDataSources(…)** returns the server for Xplorer connection types

API updates …4

- A new Python API has been added for SOCET GXP
  - Uses the C++ API as the backbone
  - Full duplication of the functionality in the C++ API
- The Python API was designed to work with Python v3.7.3 64 bit
- Documentation and several examples including “Hello World”, a feature query, image loading, and coordinate conversion are included in the DevKit installation



GXP InMotion™ v4.4.1 release details

Chris Mazur
GXP™ Product Development

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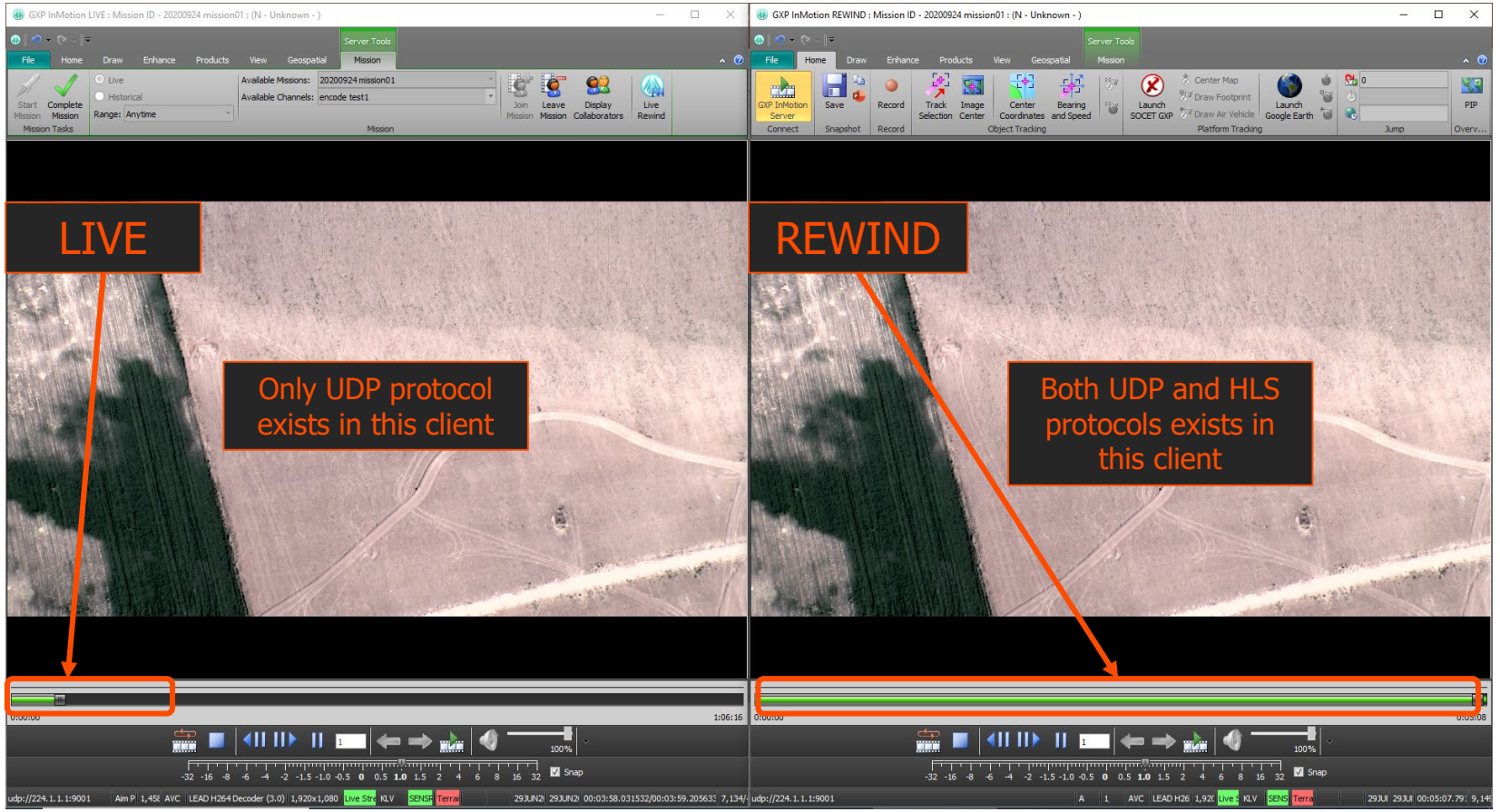
GXP InMotion v4.4.1.0 – Low Latency Video to take advantage of recorded Full Motion Video (FMV)

- A 'hybrid' approach was applied to Live Rewind to remove the 20-30 second latency previously seen in the Rewind client when jumping to real-time
- This hybrid nature is such that both the User Datagram Protocol (UDP) and HTTP Live Streaming (HLS) protocols exist simultaneously in the Rewind client
- The hybrid approach allows for accessing all the historical HLS data and allows for jumping to 'Live' with minimal latency
- The Rewind's seek bar is now green, where previously it was grey



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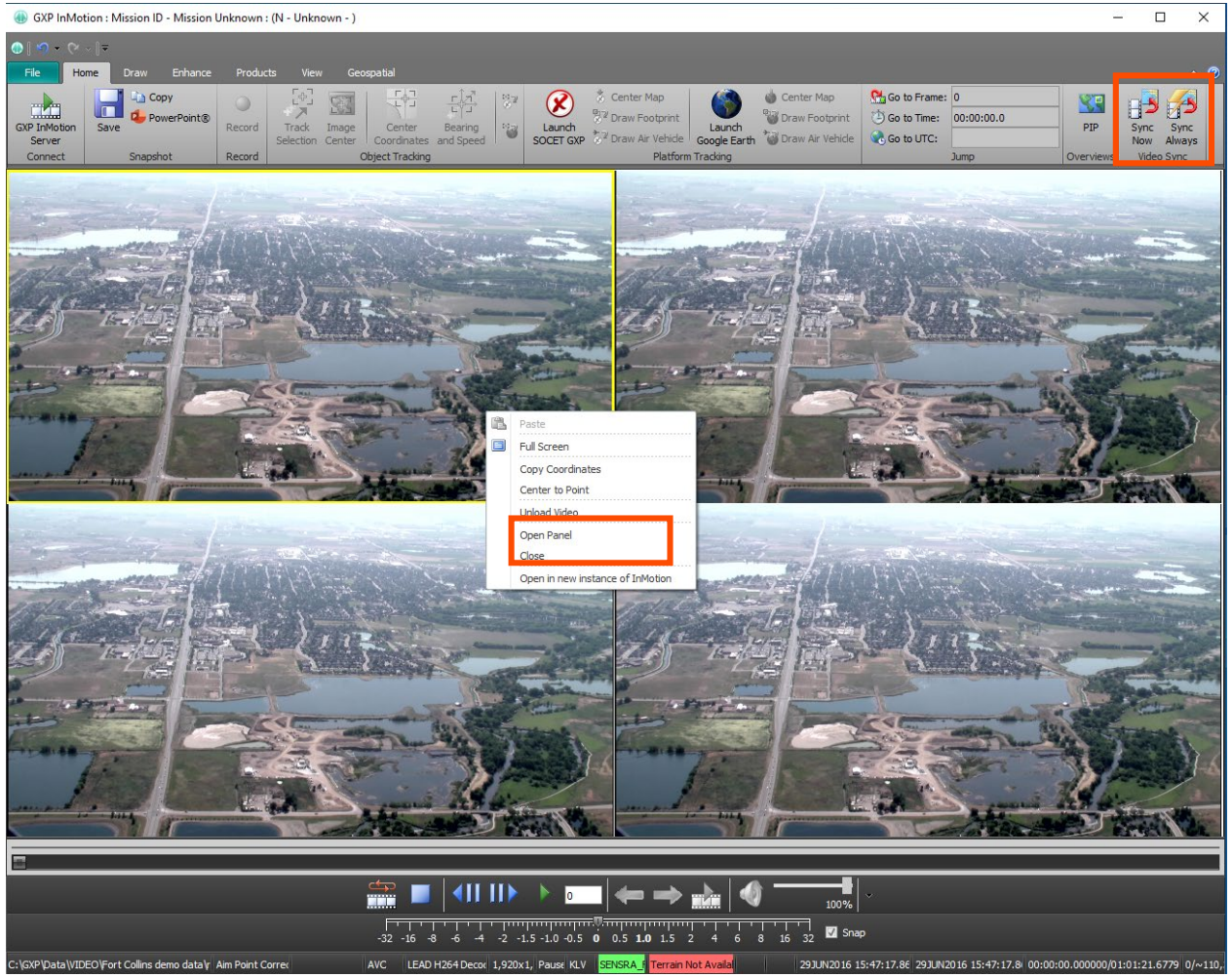
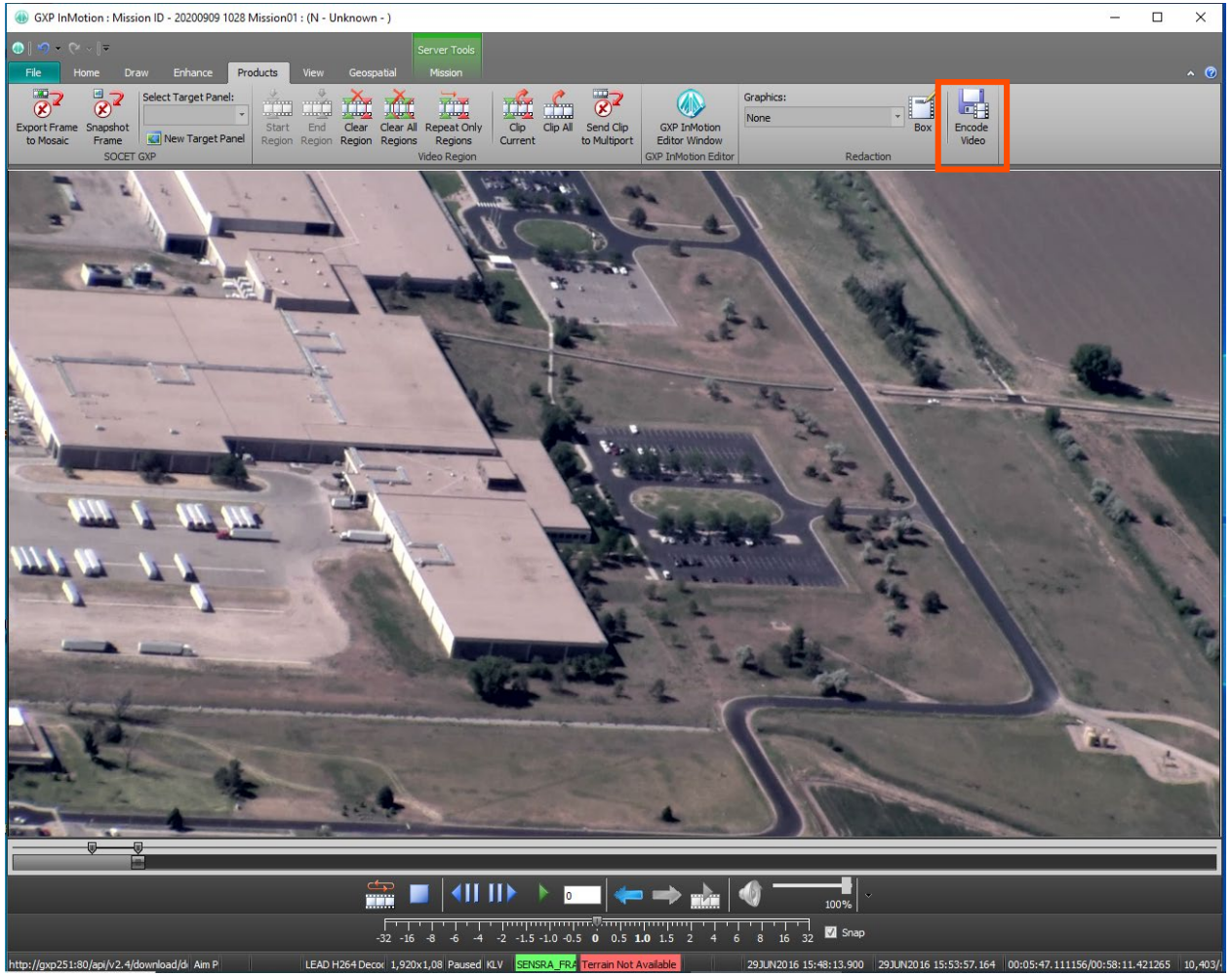
GXP InMotion v4.4.1.0 – Initial Linked Multi-panels to support Live-Rewind and Simple Open/Close Panel

- Linking of Multi-panels was added in v4.4.0.7 for FMV
- This feature in v4.4.1 was broken out to specifically support the initial capability for multi-panel enhancements (from a larger multi-panel capability)
- Here's the initial list of capabilities:
  - Continue to support 6-panel FMV capability as it is today
  - Add open panel (single panel) and close (multi-panel)
  - Work toward the full generic multi-panel visualization capability (backend), but only directly support Live-Rewind (adding a panel next to a live view)
  - We will add FMV multi-panel specifically to support Live-Rewind (adding a panel in the app to load a Live-Rewind feed next to a live feed



GXP InMotion v4.4.1.0 – Encode for HTTP/HTTPS HLS streamed video data

- The introduction of HLS as a new protocol to the desktop introduced new challenges to many familiar production tools within the GXP InMotion desktop
- Encoding of videos is the 1) stripping of KLV metadata, and/or 2) burning in of select graphical data
- Encoding of HLS video data is now supported in the desktop for HTTP/HTTPs HLS streamed video data



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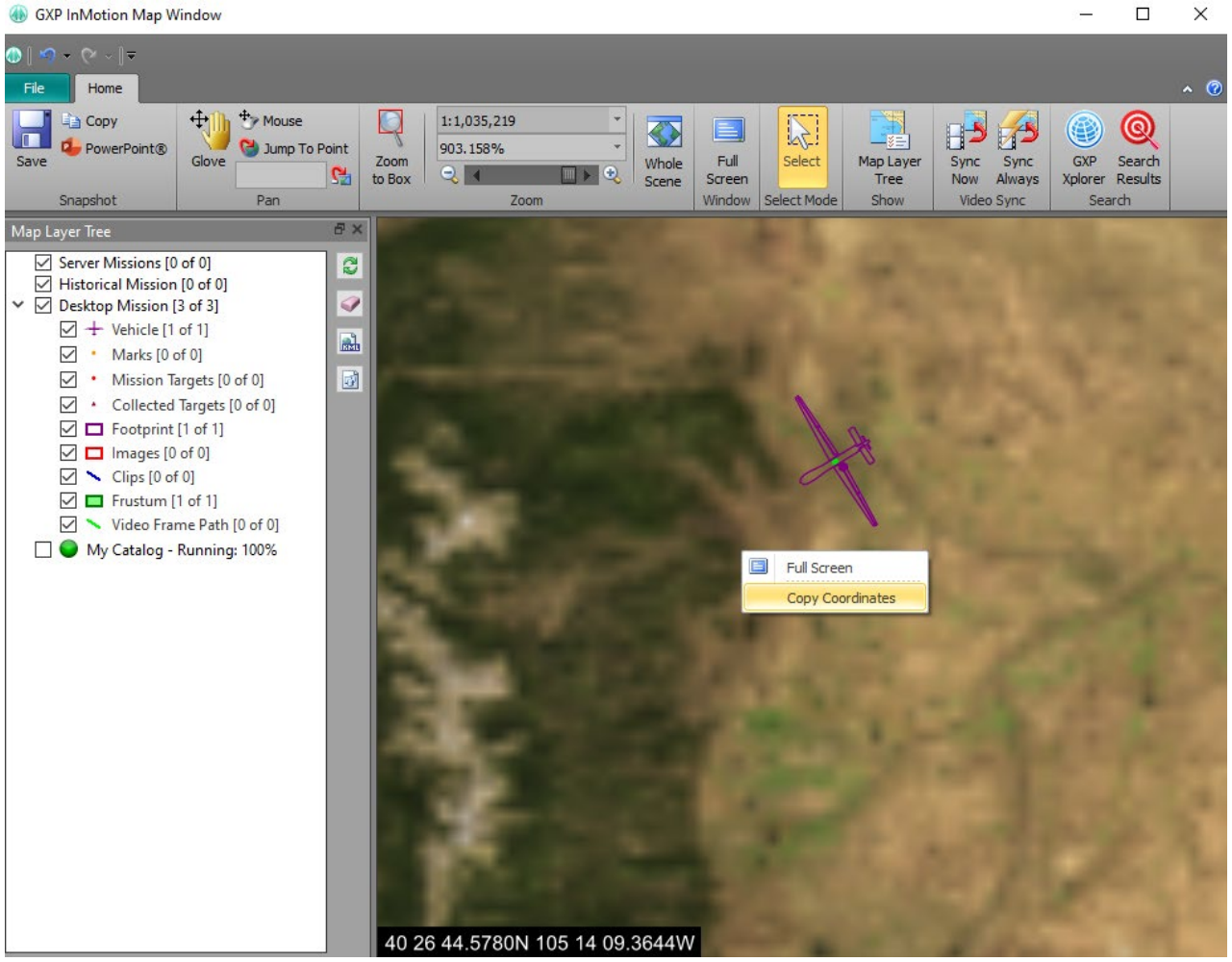
GXP InMotion v4.4.1.0 – Copy coordinates out of the Map Window

- A new right-click option to Copy Coordinates was added to the GXP InMotion Map Window



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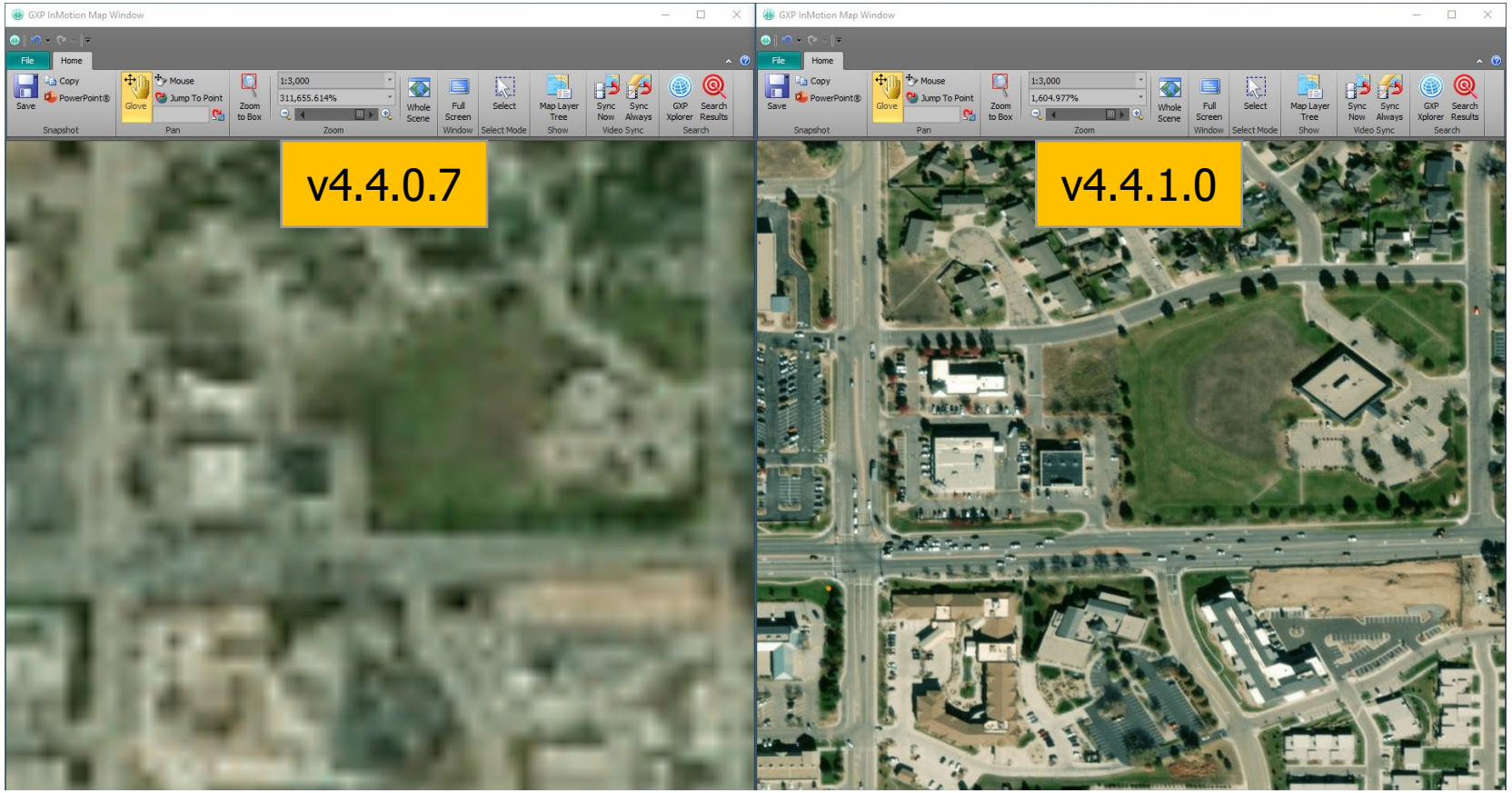
GXP InMotion v4.4.1.1 – GXP InMotion Map not showing best layer of an AGS URL

- A significant issue for a customer was discovered in v4.4.0.7 related to displaying the highest resolution level of an AGS URL in the GXP InMotion Map Window
- The same issue did not persist in a SOCET GXP Multiport because the GXP InMotion Map Window is actually based on the SOCET GXP Visual Coverage Tool (VCT)
- v4.4.1.0 has resolved the issue for the customer in that the highest resolution map server data is properly displayed



https://services.arcgisonline.com/arcgis/rest/services/World_Imagery/MapServer

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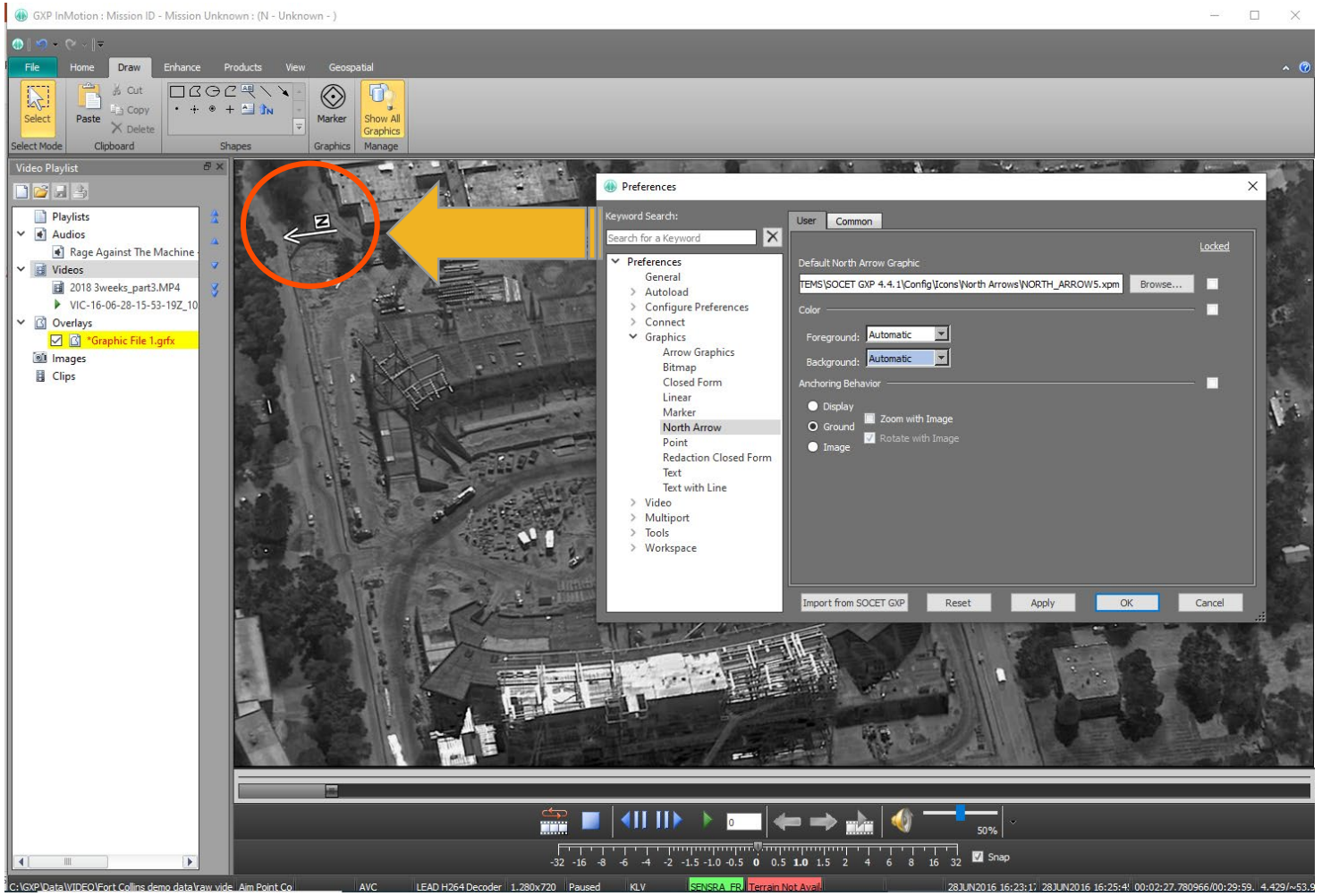
GXP InMotion v4.4.1.1 – Create Preferences for North Arrow Graphic

- A new Draw capability, North Arrow, was added in v4.4.0.7 for FMV and MIE4NITF
- Preferences for the North Arrow were added in v4.4.1.0
- The North Arrow, by default, is now displayed in display space (v4.4.1.3)



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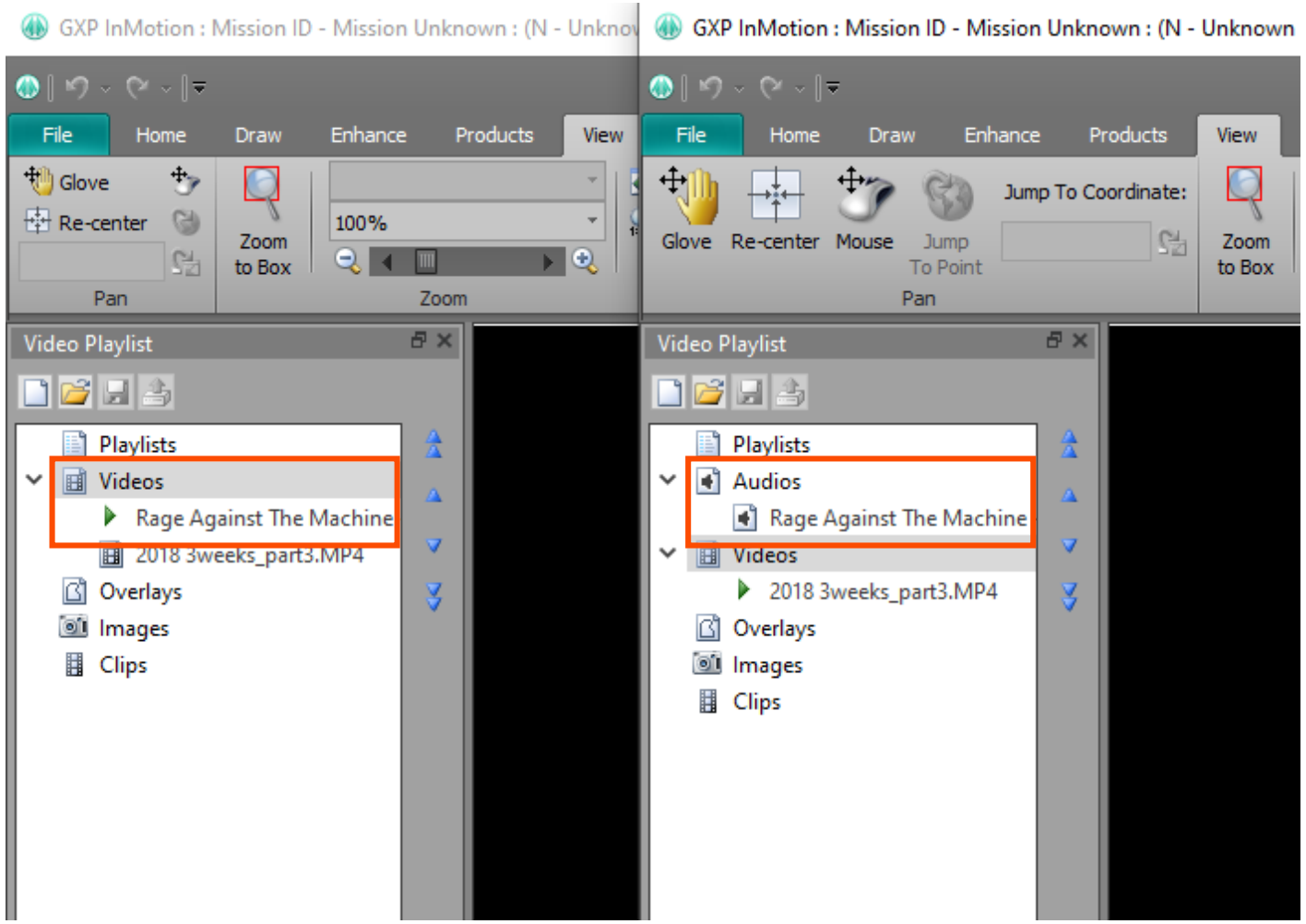
GXP InMotion v4.4.1.1 – Audio Files are loaded into Video Node/Folder

- Early in v4.4.x, audio files (such as MP3) were supported in GXP InMotion
- In these early versions, the audio files would load under the 'Videos' node of the Playlist
- In v4.4.1.0, audio now loads under a node called Audio in the Playlist



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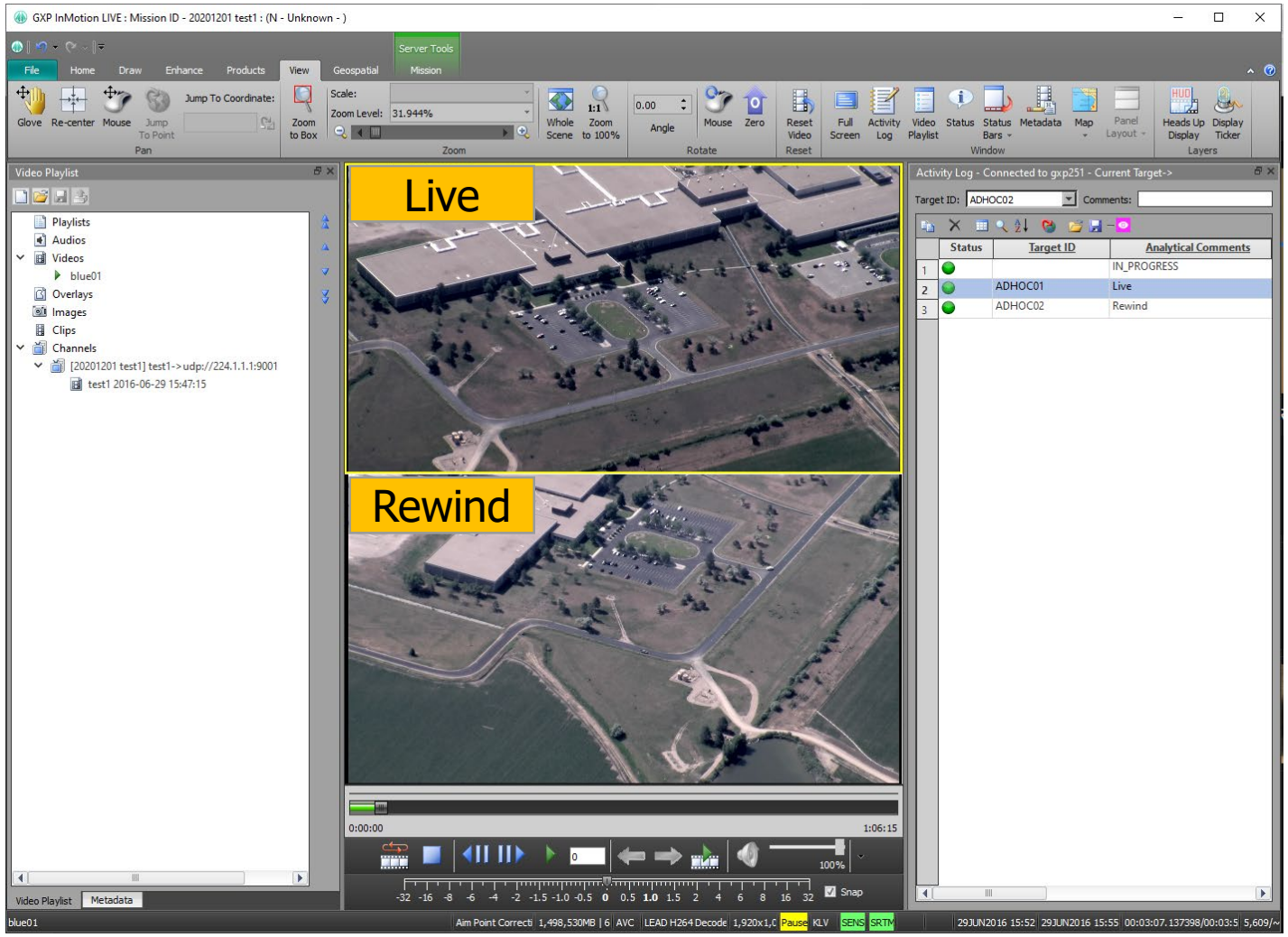
GXP InMotion v4.4.1.2 – GXP InMotion Live Rewind in one instance

- When Live Rewind was introduced, it was developed with a specific customer in mind; The initial implementation focused on that customers CONOP of having a real time instance of the video next to a forensic instance of the same mission
- In v4.4.1.2, we've expanded Live Rewind's flexibility to allow for side by side panels of 'Live' and 'Rewind'
- In the v4.4.1.3 release, Live Rewind will be able to function all within one panel of one GXP InMotion instance



Imagery of MX-15 videos over Ft. Collins, CO; Courtesy of L-3 Communications, EO/IR Inc.

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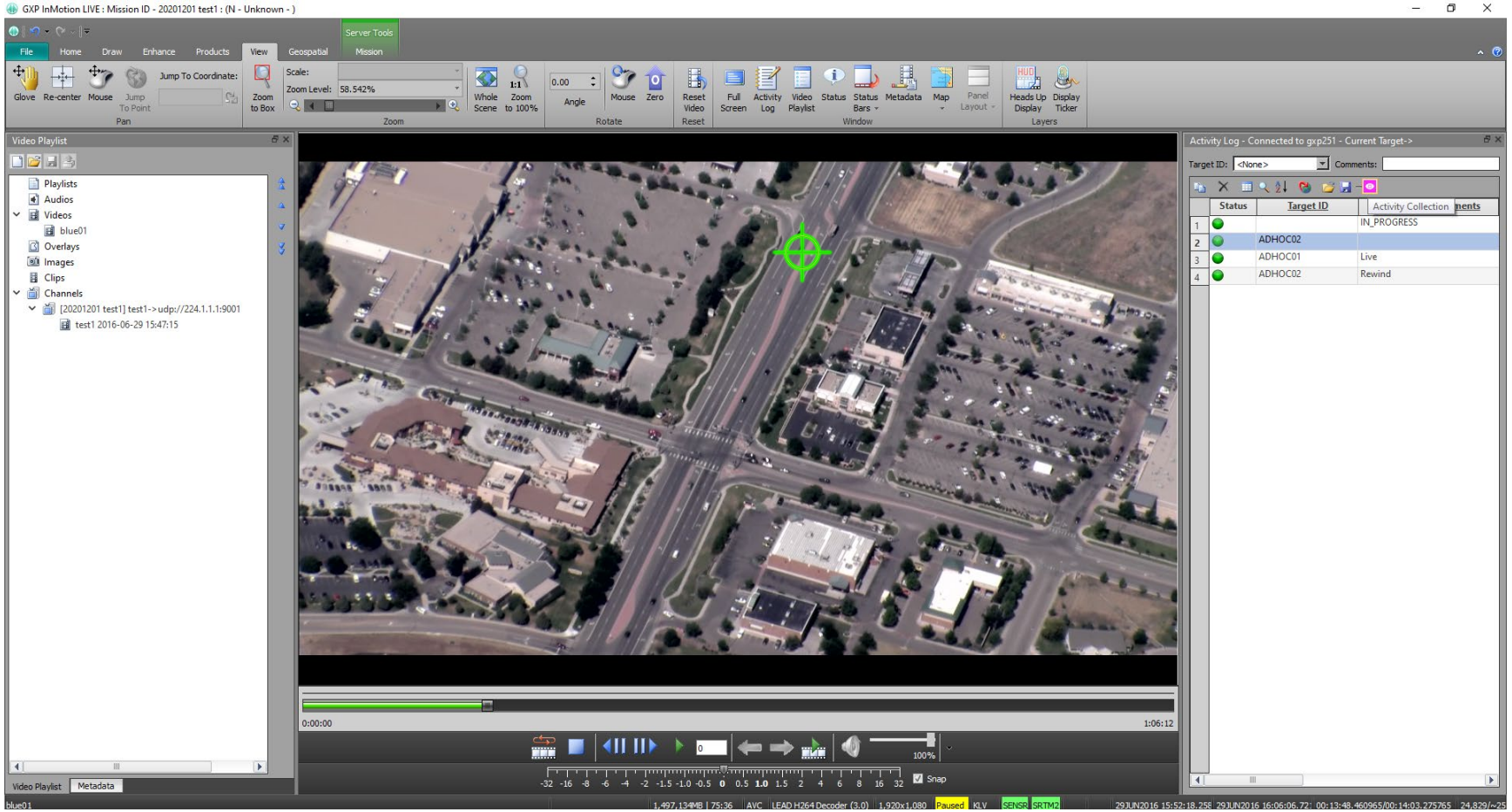
GXP InMotion v4.4.1.2 – Activity tagging on video

- Previously, any activities captured were logged with the center coordinate of the video frame
- Now, in v4.4.1.2, users can tag multiple specific points within the video frame
  - These tags are added to the Activity Log, where a user can assign a unique description for the tag, and the coordinate of the tagged location is recorded for forensic purposes



Imagery of MX-15 videos over Ft. Collins, CO; Courtesy of L-3 Communications, EO/IR Inc.

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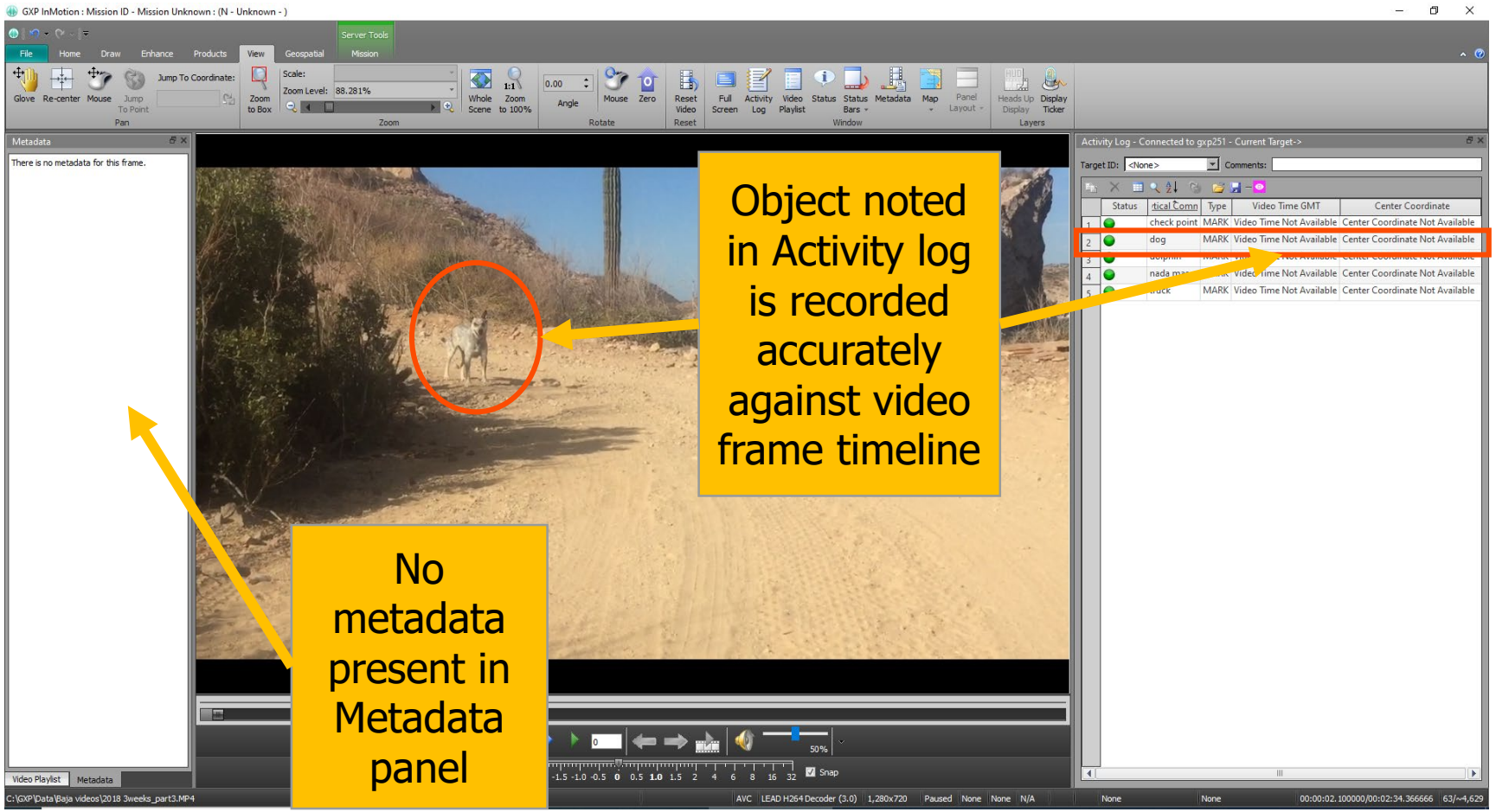
GXP InMotion v4.4.1.2 – Associate 'activities' with video frames when no metadata exists

- Previously, for missions captured with no metadata, any activities captured were not associated with the video frame observed
- Now, in v4.4.1.2, if you capture and conduct a mission using a video without metadata, any activities captured during the mission are not tied to the timestamp of the video and users can 'jump to' those activities in the historical mission



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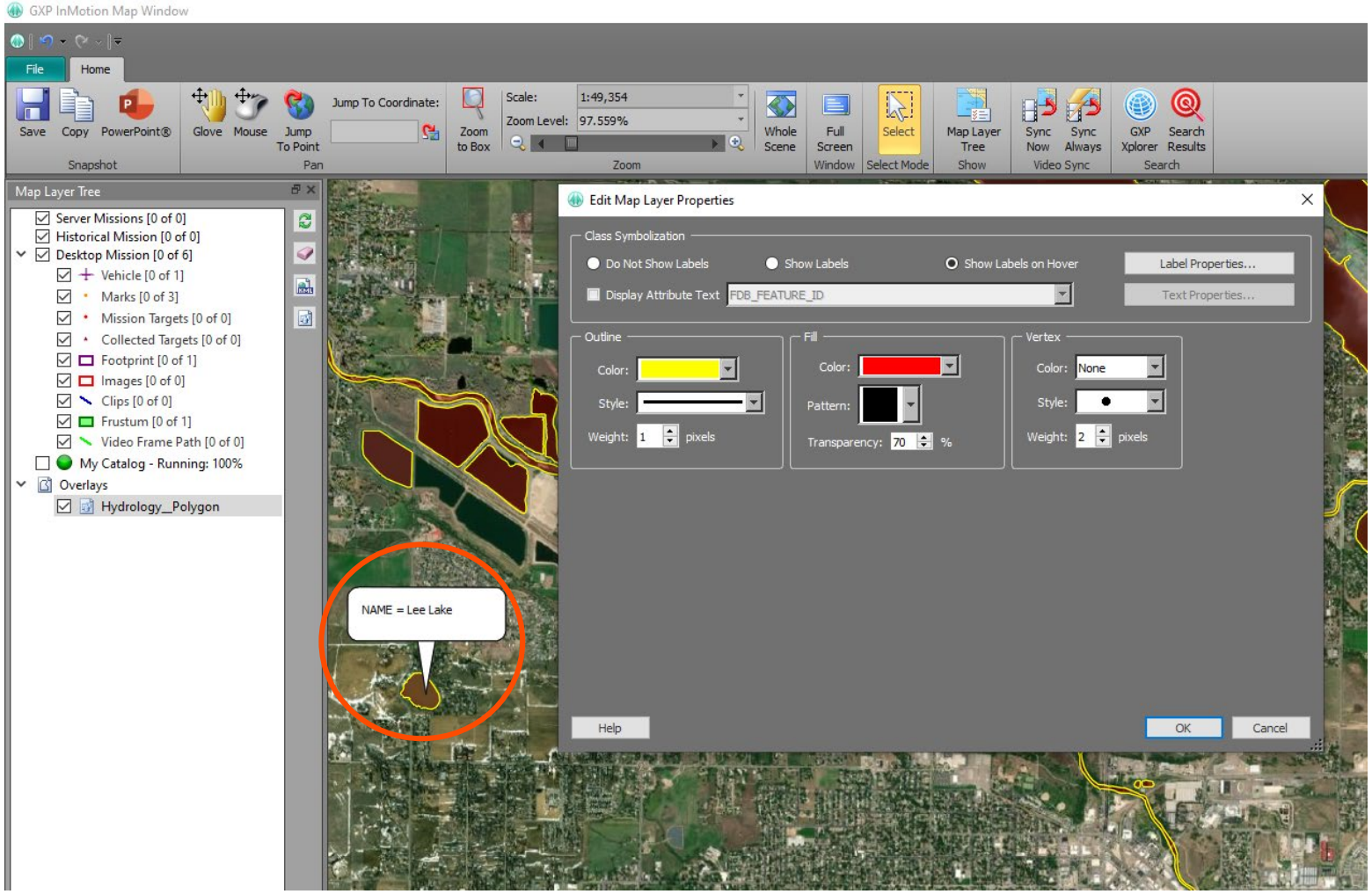
GXP InMotion v4.4.1.2 – Shapefile Properties for GXP InMotion Map Window

- Shapefiles were added as a new feature to the GXP InMotion Map Window in v4.4.0.7 for a specific customer
  - The initial support was a thin line support for shapefiles, namely, display only
- In v4.4.1.2 users can now change common properties for imported shapefiles such as Outline and Fill colors, as well as Label display properties



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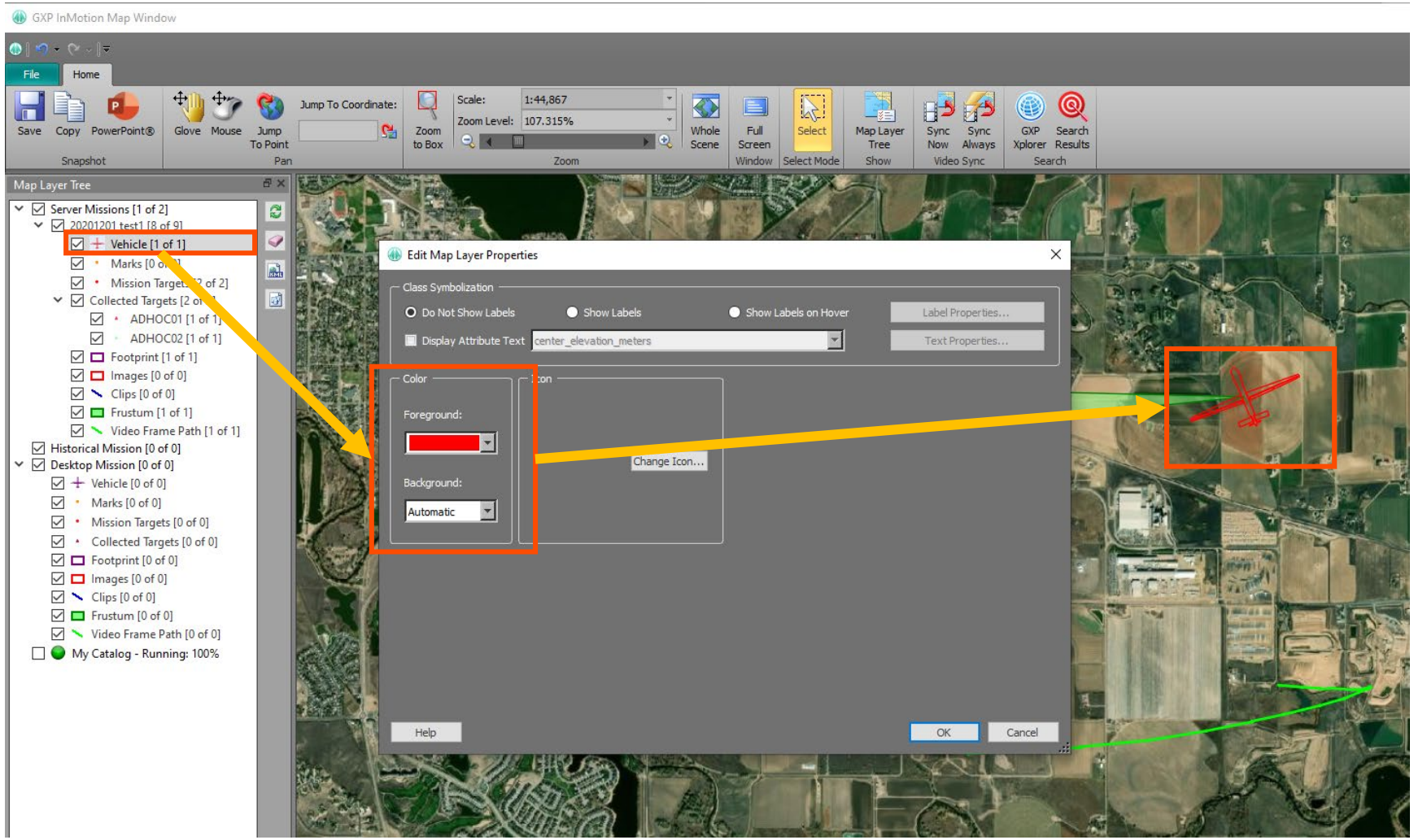
GXP InMotion v4.4.1.2 – Map Window updates

- The GXP InMotion Map Window is used to provide situational awareness during real time exploitation
- The following new features were added to aid map awareness
  - Ability to change color of Vehicle/Platform icon in GXP InMotion Map Window
  - All GXP InMotion map mission layers now have color properties



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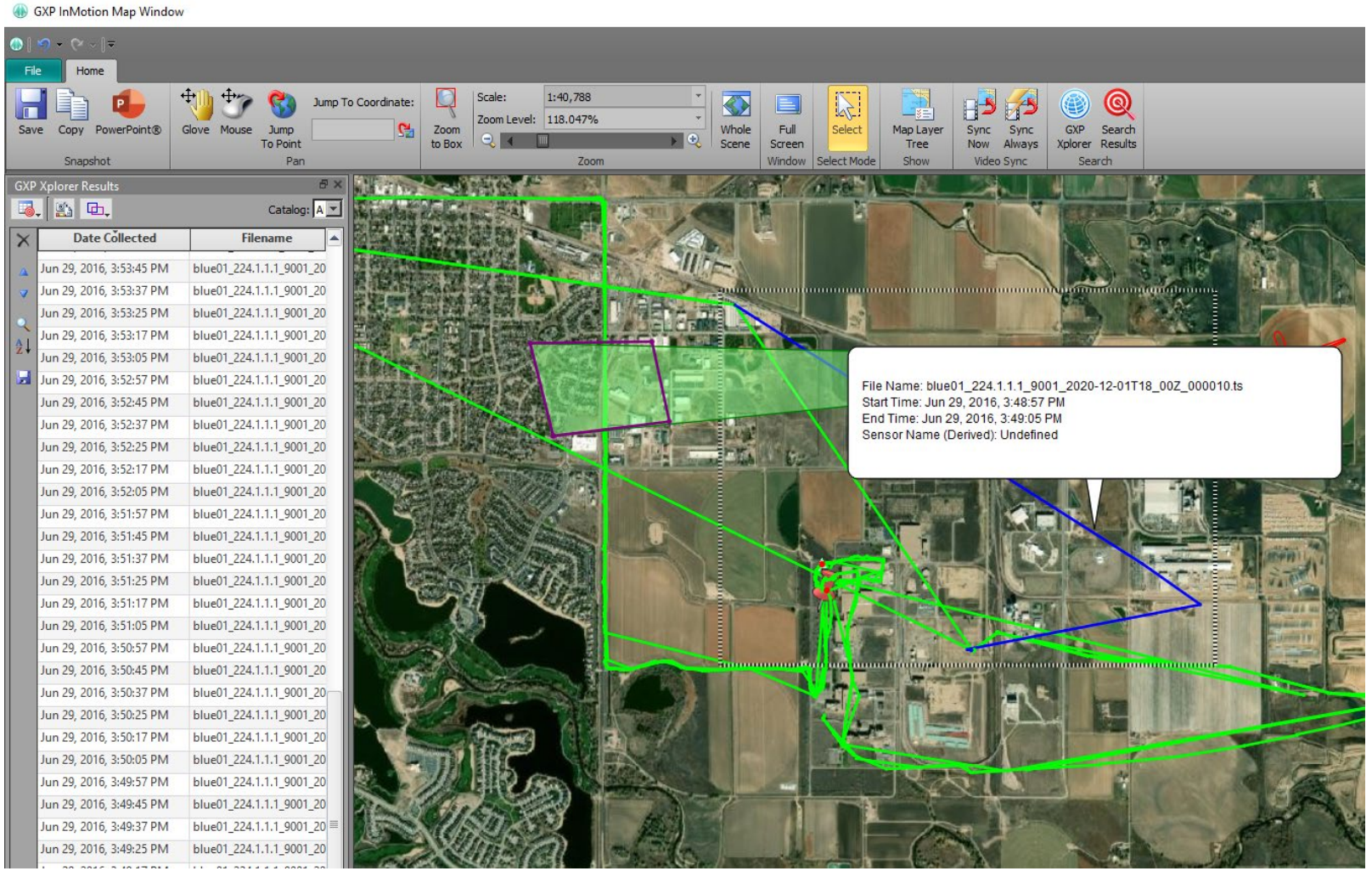
GXP InMotion v4.4.1.2 – Workflow Improvement Module (WIM) updates

- The WIM is used to connect to GXP Xplorer to search for additional data
- The following new features were added to aid with searching historic video data
  - Video track polylines change color when selected (the blue line represents a selected video track)
  - Present to the user 'feature' labels when hovering over video data



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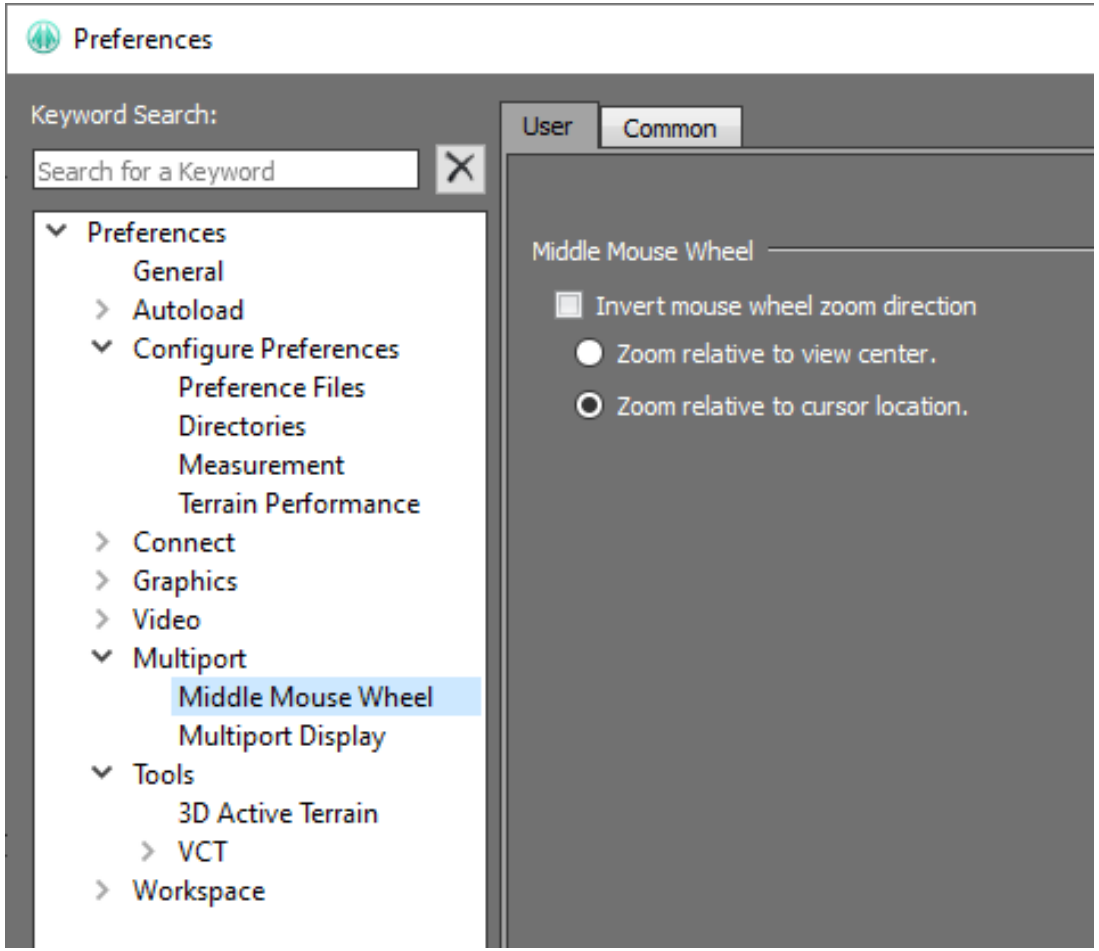
GXP InMotion v4.4.1.2 – new Middle Mouse Wheel functions

- GXP InMotion now allows users to functions when using the middle mouse wheel to scroll over video:
  - Zoom relative to view center, or
  - Zoom relative to cursor location



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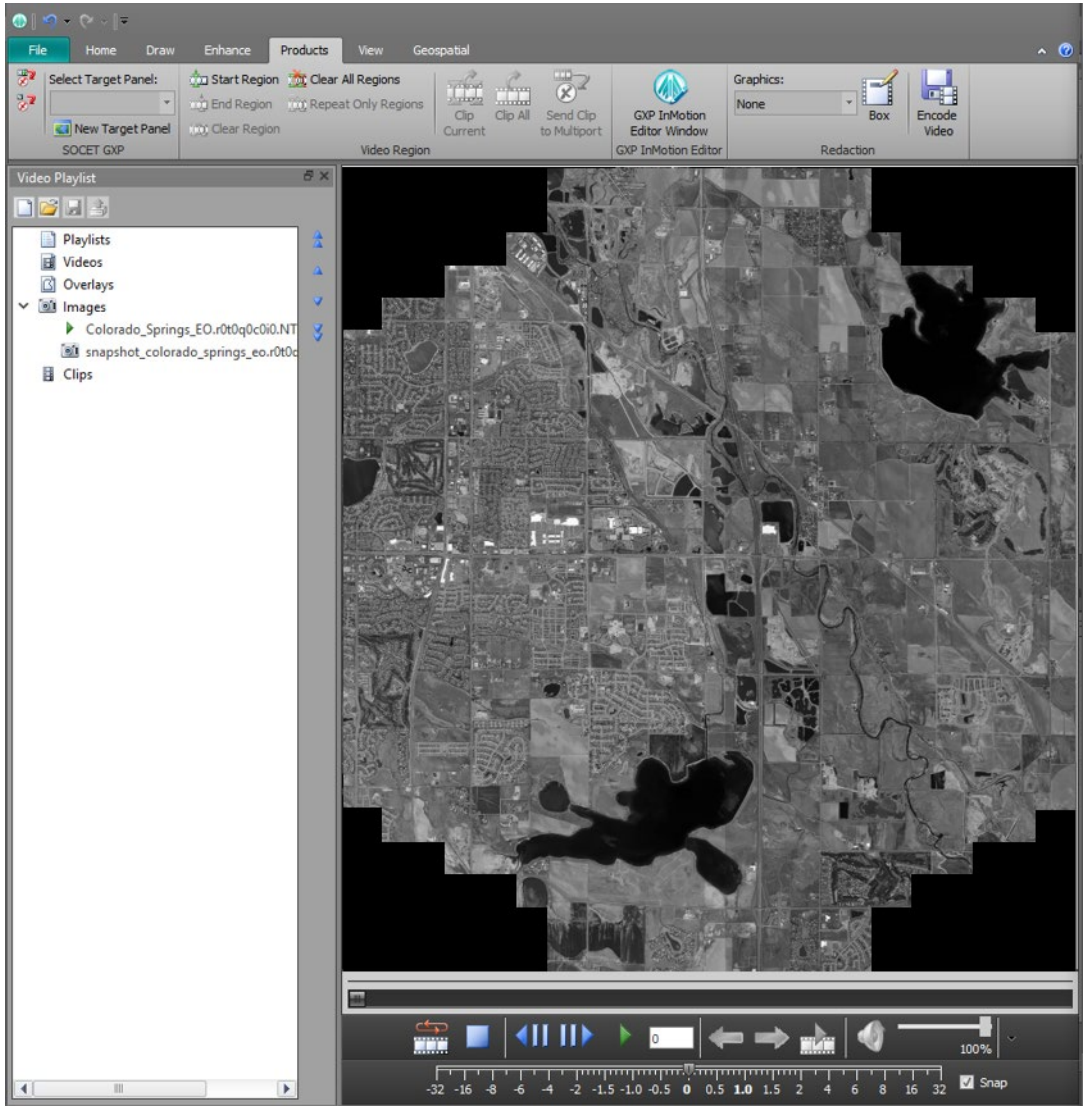
GXP InMotion v4.4.1.3 – MIE4NITF updates

New for v4.4.1.3

- Available in v4.4.1.2
  - Load into GXP InMotion to provide basic visualization and play motion imagery like video
  - Roam, zoom, pan over imagery and exploit frames in SOCET GXP Multiport
  - Support FDR Visualization of MIE4NITF Defined Dynamic Range Products in GXP InMotion
- New in v4.4.1.3
  - Integrate Move Threshold Preference from SOCET GXP into GXP InMotion
  - Integrate MSP sensor models for MIE4NITF imagery
  - Map MIE4NITF metadata to Snapshot/chip NITF Output Files
- Remaining 2021 Planned features
  - Add support for MIE4NITF Derived Shapefile Overlays and 4676/XML
  - Add support for Multiband MIE4NITF Products

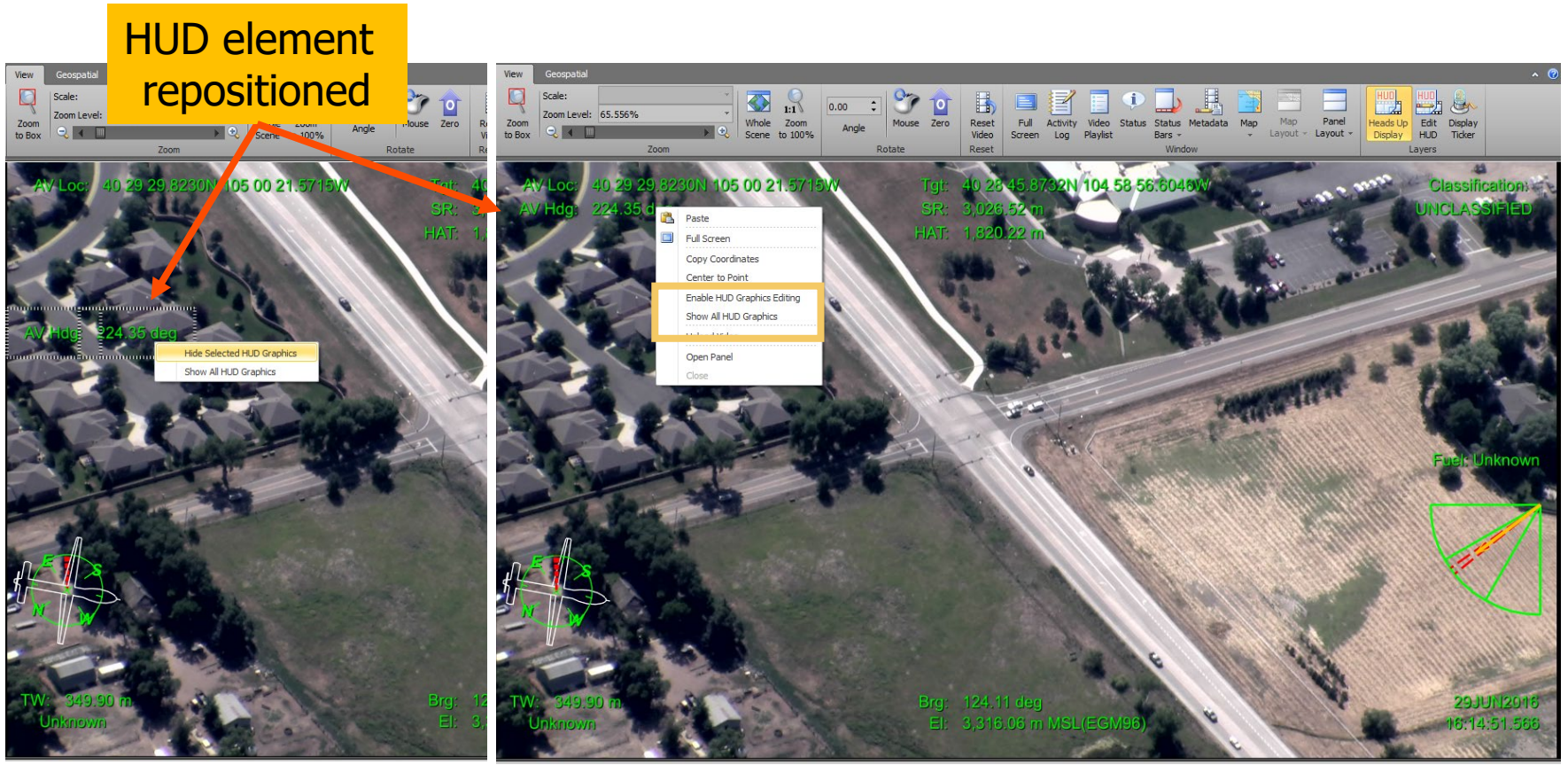


Imagery provided by Maxar.

New for v4.4.1.3

GXP InMotion v4.4.1.3 – HUD editing capabilities

- Ability to Hide/Show HUD Elements with right-click
- Ability to reposition HUD elements
- HUD elements removed are restored when the application is reopened
  - A future feature is planned to save HUD edits



Imagery of MX-15 videos over Ft. Collins, CO; Courtesy of L-3 Communications, EO/IR Inc.

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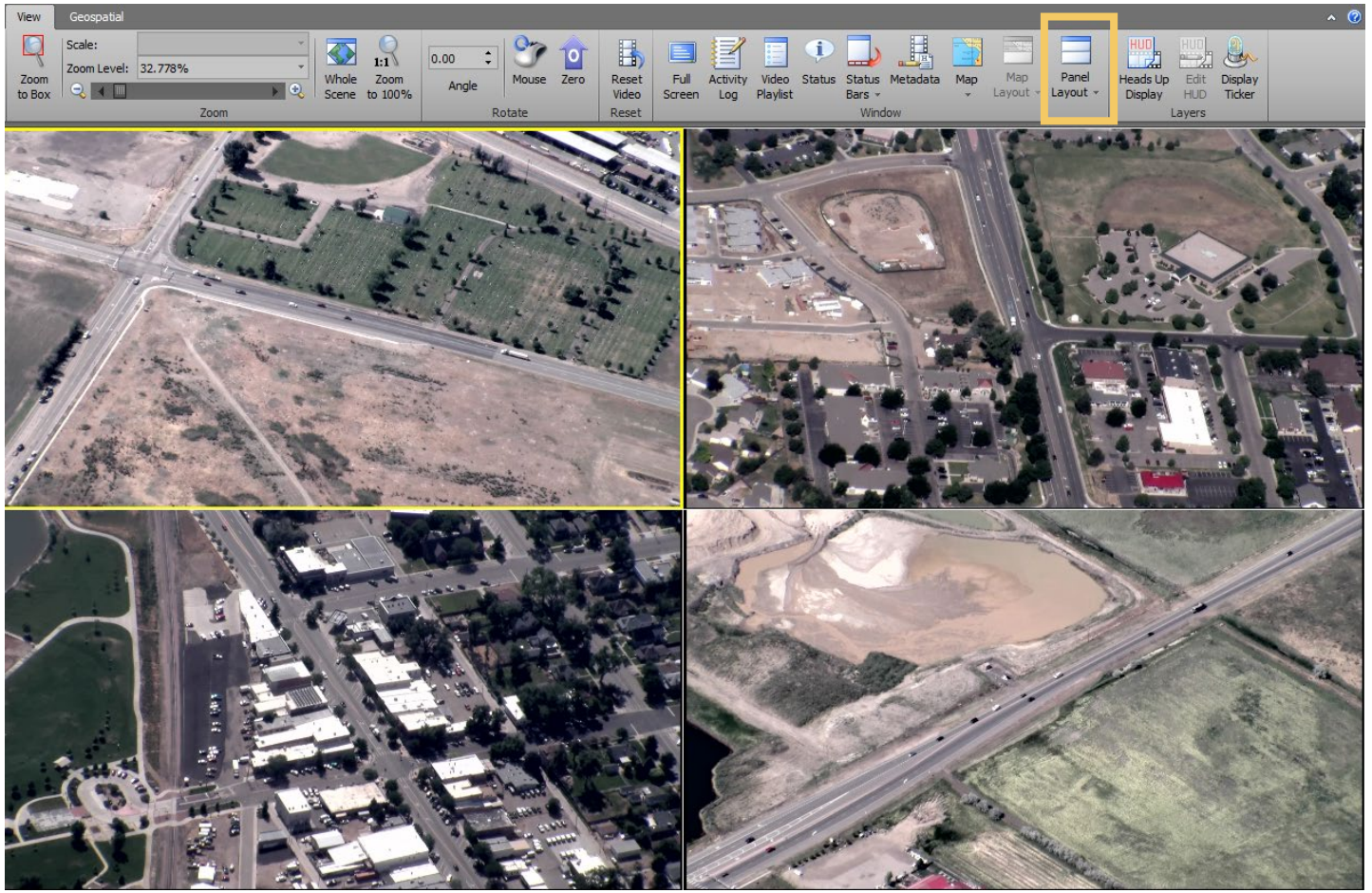
New for v4.4.1.3

GXP InMotion v4.4.1.3 – Multi-Panel Capabilities

- New capability to allow users to configure Multi-Panels
  - Users can configure panel combinations such as 1 panel only, 2 panels, 3 panels, 4 panels, 5 panels, or up to 6 panels in one video scene
- Added support to allow Multi-Panels to be used for Missions with multiple captures
  - This means a user can connect to and display one Mission with two captures or more. The screenshot shows one mission with four simultaneous video captures displayed



Imagery of MX-15 videos over Ft. Collins, CO; Courtesy of L-3 Communications, EO/IR Inc.

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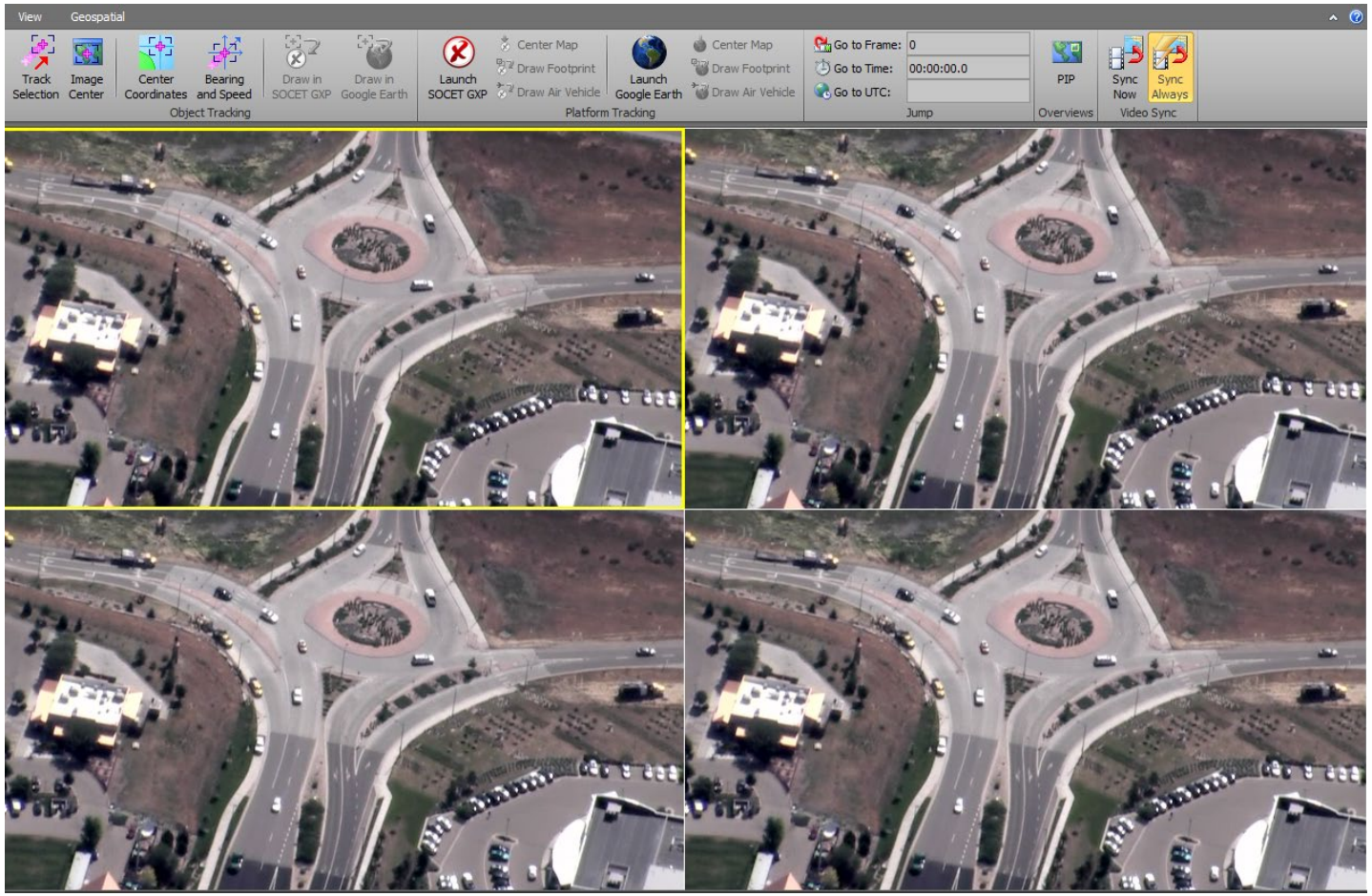
New for v4.4.1.3

GXP InMotion v4.4.1.3 – Multi-Panel Capabilities …2

- There are now new support options for linking panels, such as:
  - Apply to all Panels
  - Panels Linked in Ground Sample Distance (GSD)



Imagery of MX-15 videos over Ft. Collins, CO; Courtesy of L-3 Communications, EO/IR Inc.

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New for v4.4.1.3

GXP InMotion v4.4.1.3 – miscellaneous

- GXP InMotion desktop needs to go to Full Screen
- Populate TRE ACFTB takeoff time with 601 tag 72 Event Start
- Support for MISB ST601 Special Values
- Map MIE4NITF metadata to Snapshot/chip NITF Output Files
- Video Editor support for HTTP/HTTPS/HLS Streamed Videos
- Remove unused preferences from GUI

Thank You

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