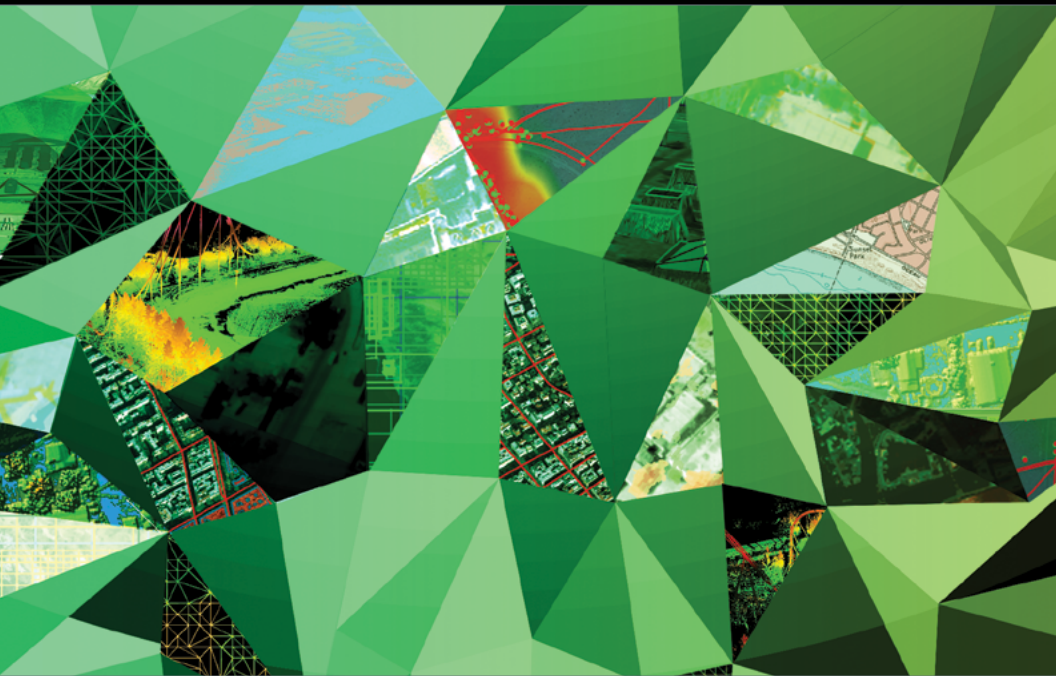# SOCET GXP® v4.1
Release enhancements

BAE SYSTEMS

v4.1

KEY ENHANCEMENTS ARE IN THE AREAS OF INFRASTRUCTURE, VIDEO ANALYSIS, EXPANDED CONNECTIVITY, ENRICHED PRODUCT GENERATION, AND AUTOMATION
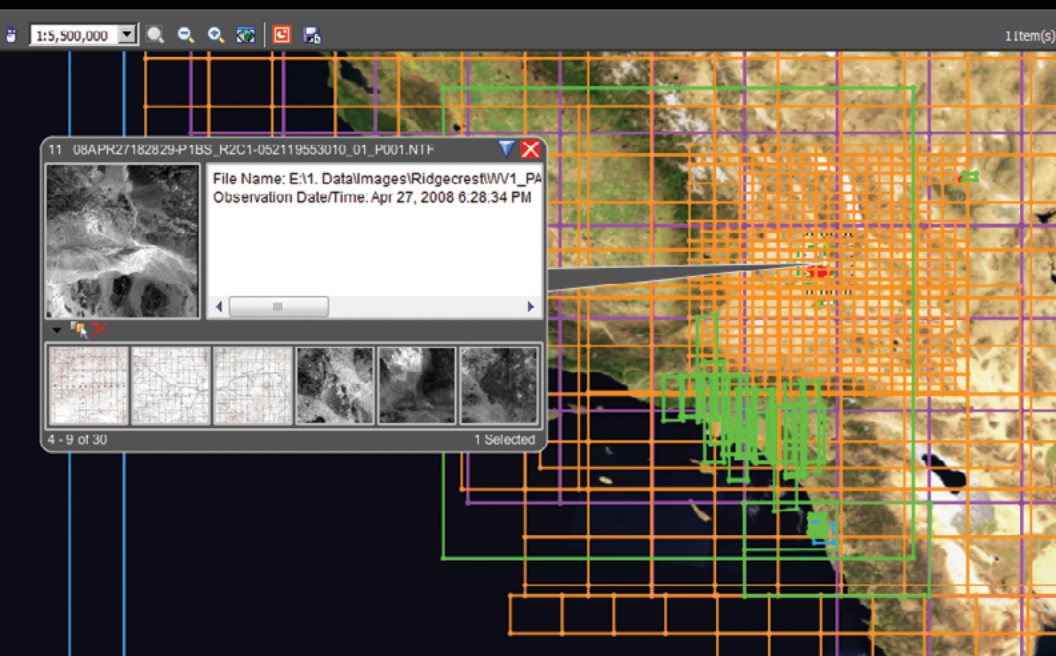
SOCET GXP® v4.0 and now v4.1 eclipse the capabilities of GXP® imagery exploitation solutions providing a transitional mechanism from legacy solutions, such as SOCET SET®, with customer requested enhancements.

SOCET GXP v4.1 enhancements promote the migration from SOCET GXP v4.0 and SOCET SET v5.6 as well as other geospatial exploitation tools, providing imagery exploitation professionals with a solution that encompasses ease-of-use and access to advanced features for in-depth operations.

The release introduces advances in data management and discovery through the collaboration of SOCET GXP and GXP Xplorer® along with improvements in photogrammetry, 3-D, and functionality upgrades for enhanced usability and efficient workflows.

DATA MANAGEMENT AND DISCOVERY

File Name: E:\1. Data\Images\Ridgecrest\WV1_PA
Observation Date/Time: Apr 27, 2008 6.28.34 PM

11 08APR27182829-P1BS_R2C1-052119553010_01_P001.NTF

4 - 9 of 30   1 Selected

1:5,500,000   1 Item(s)

The Visual Coverage Tool (VCT) displays geospatial information from the Workspace Manager Map View.

The primary layered view of geospatial information delivers a map display of footprint coverage for data within the VCT Catalog or data loaded into the Workspace Manger (Data View). A quick preview of image, terrain, features, maps, charts, and video data is available before loading into the Workspace Manager for exploitation.

The Map View provides the geospatial background for data that is easily identifiable based on color codes. Standard Multiport® mouse operations enable panning and zooming of the map.

Geospatial data discovery and management are vital components to efficiency from start to finish.
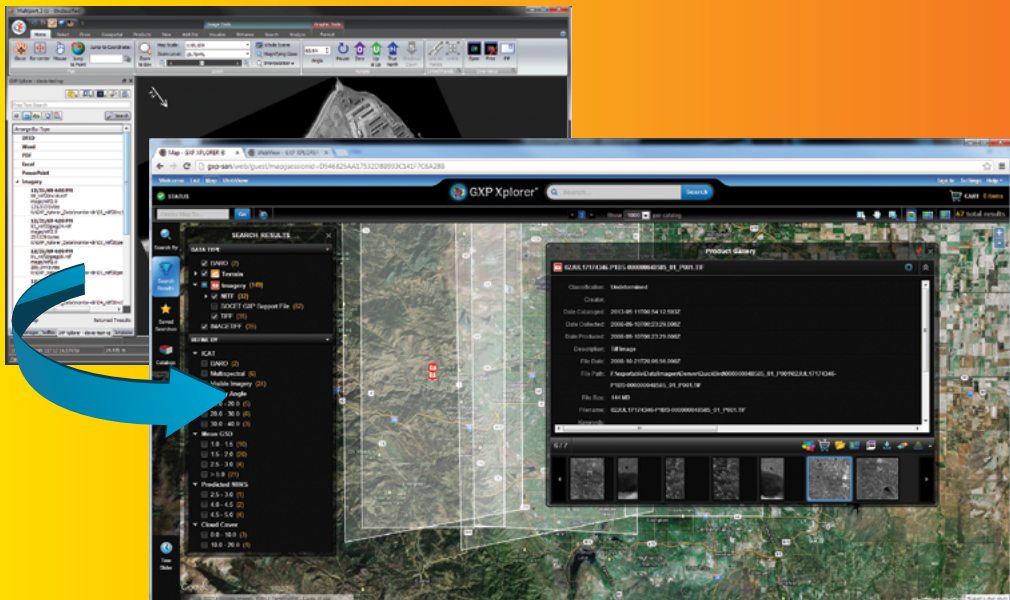
GXP Xplorer and the GXP Xplorer Connector provide enterprise-wide data management.

GXP Xplorer v2.1 delivers an intuitive Web-based interface for managing data with or without geospatial context, but vital to the analysis and exploitation task. The GXP Xplorer Connector offers a query mechanism from within the SOCET GXP Multiport. Data is discovered with advanced query and search operations based on the current extent of the Multiport view.

VISUAL COVERAGE TOOL AND WORKSPACE MANAGER MAP VIEW

The Map View is used to browse the Workspace Manager and the VCT Catalog for geospatial data and products. Data loaded within the Workspace Manager and VCT Catalog displays as a footprint over a map background.

Catalog local data

Geospatial catalog configuration for local and mapped directories.

– Search specified directories with particular data types including georeferenced data and products
– Display footprints showing coverage of data in the catalog

Map View

Cataloged images, vectors, video, terrain, and maps and charts display as footprints over a map background.

– True Marble Raster Map default with functionality to select Compressed Arc Digitized Graphics (CADRG) and CIB map backgrounds
– Additional map backgrounds available with the Web Map Service (WMS) option

Data exploitation

Quickly preview and open data into SOCET GXP.

– View results in the Map View with functionality to zoom and pan the map
– Preview image thumbnails and metadata with the Balloon Preview Panel
– Select for viewing within the Multiport
– Results are color coded based on data type, images, terrain, features, map, charts, and videos

Quick report

Snapshot coverage to PowerPoint®.

– Single-click operation displays holdings and presents them in PowerPoint

GXP XPLORER CONNECTOR

A direct connection to GXP Xplorer from SOCET GXP to view, open, and download geospatial data. Discover, preview, and exploit local and remote data holdings with dynamic data delivery to the Multiport and Workspace Manager.

Connect to GXP Xplorer within a SOCET GXP Multiport

Connect to GXP Xplorer directly from a Multiport to view, open, and download images and metadata.

– Automatic search on image load, view thumbnails and metadata, and download and save imagery
– Flexible options to customize image search to narrow results
– Select and customize image metadata to display (i.e., sensor, bands, size, and azimuth of obliquity)
– Image Preview Panel displays an overview or full-resolution image in an adjacent panel

Display results based on the current view in the Multiport

The search area is determined by the four-corner coordinates displayed in the Search Panel of the Multiport.

Filter results

Filter search criteria by file type and view results in the Results Table window.

– Identify search area parameters to limit results by active panel, select coordinates, or area of interest

View overview images before downloading to the Multiport

Displays an overview or full-resolution image in an adjacent panel.

– Pagination feature to manage the number of results to display and to conserve system resources

SOCET SET TRANSITION FUNCTIONALITY

SOCET SET has its roots in U.S. government mapping, charting, and geodetic product generation. Key components of that legacy are available in SOCET GXP v4.1.

Communication and Line of Sight (LOS) analysis

A mensuration tool used for point-to-point LOS including cylindrical or cone analysis shape definitions for the LOS vector.

– Ability to use Point 2 Point LOS annotation tool with a Stereo or Split Screen Stereo Multiport
– Enables users to identify features visible to a point given a vector and view angle
– Coordinates and measurements are added to the Mensuration Log – measurements are updated automatically when Point 2 Point LOS or obstruction measurements are created

Adjusted Metric Support and Data (AMSD) production

A streamlined workflow with automation to measure and triangulate NTM imagery based on specific production standards and requirements.

– Integrated with SOCET GXP Triangulation Overview
– Add, edit, and review tie points on a virtual mosaic
– Custom tie point filters
– Measure points on images that correspond to specific point types; parent, re-task, geo coincident, etc.
– NTM decompression on-the-fly
– GDAT compatible
– Export measurements

Controlled Image Base® (CIB)-like* production

The production of ready-for-distribution compressed and uncompressed CIB products.

– Logical workflow management
– Simultaneous production of multiple cells
– Improved image enhancement tools
– Utilizes NTM or commercial imagery

*SOCET GXP Controlled Image Base® (CIB) format production module [which uses MIL-PRF-89041, 15 May 1999 format specifications]

Digital Point Positioning Data Base (DPPDB)-like** production

The production of ready-for-distribution DPPDB stereo models created from NTM or commercial imagery using intuitive workflows from triangulation progressing through to a DPPDB product that can be burned to DVD.

– Logical workflow management
– Catalog and auto load reference graphics and terrain data
– Improved image enhancement tools
– Utilizes NTM or commercial imagery

*** SOCET GXP Digital Point Positioning Data Base (DPPDB) format production module [which uses MIL-PRF-89034, March 1999 format specifications]*

Cursor tracking

Set a reference point from which real-time measurements are computed and optionally logged including height, length, slant-length, slope, and azimuth

– Display instantaneous length, slant length, height, scope, and azimuth
– Options for log file reporting, and cursor/text colors based on distance and height changes

ClearFlite®

Automatically measure and record natural and man-made vertical obstructions for airfield exploitation for airfield safety, security and maintenance, and general mapping.

– Collection management combining feature extraction and attribution with Obstruction Identification Surface (OIS) layers
– Utilizes current SOCET GXP feature extraction tools
– Cursor Tracking tool provides real-time mouse movement for elevation and height above the surface model, runway endpoint and centerline distance to an obstruction, and distance from the edge of a surface model section to an obstruction

Sensor models and coordinate systems

– Community Sensor Model (CSM) for user-developed sensor models
– Non-earth ellipsoid/geoid support*
– Local Space Rectangular coordinate system support*

SOCET GXP v4.1 patch

PHOTOGRAMMETRY AND RADARGRAMMETRY

Accuracy in SOCET GXP is a derivative of behind-the-scenes photogrammetry and 25+ years of developing photogrammetric software solutions. Accuracy and the rich Multiport user experience are unequaled in SOCET GXP with enhancements in sensor modeling and photogrammetry in v4.1.

Automatic image registration

The Auto Align option aligns (registers) a single slave image to a master image loaded together in the same panel or two separate panels in the same Multiport.

– Slave image is warped to the master within a few seconds
– Same panel display is stitched together in the visible area

Stereo Align

Remove X- and Y-Parallax in the Stereo Multiport using a modified glove-align type feature.

– Correct Y-Parallax in a Stereo or Split Screen Stereo Multiport
– Computes a two-image intersection for XYZ ground location

CIB Registration

Register one or more georeferenced images (of any supported format) with automatically selected CIB images.

– CIB AutoReg is used with AutoSOCET to triangulate images

Support for Pleiades sensors

Pleiades-1 satellite is the first very high-resolution satellite from EADS capable of providing stereo and orthorectified imagery at 0.5-meter resolution.

– Native image load with sensor model metadata provided in the CSM for SOCET GXP

Automatic Point Measurement (APM)

APM improvements customize the automation supporting government and commercial triangulation requirements for tie point patterns for specific projects.

– Display and edit tie point candidate locations on virtual mosaics of project areas before running APM

OrthoVistaXtreme

Add-on software processing application that produces seamless mosaic image data from tens and hundreds of thousands of input orthophoto images.

– High performance colorbalancing and seamlines

ENVI standard image format

Initialize a sensor model from coordinate information contained in a ENVI header file as well as the metadata for georeferencing the compressed image.

– Support ECW and ECWP formats

NGATE

Performance improvements and improved extraction of building edges and bases.

Mensuration Services Program (MSP) 1.2.1

Mensuration services government program for NTM and commercial imagery measurements and sensor modeling.

– Improved performance
– New NTM sensor models
– New commercial satellite sensor models

Synthetic Aperture Radar (SAR) sub-aperture stack

SAR processing algorithm used for the identification of moving objects and high return glint.

– Algorithm takes a SAR complex image in SICD format allowing the user to break the image down into smaller sub-images

MULTIPORT

Additional functionality, dockable windows, and performance enhancements continue to improve the user experience for geospatial data exploitation in the Multiport.

Draw tab – Mensuration group

New capabilities for recording and measuring information from imagery, terrain, and features from within a Multiport.

– Cursor tracking, polyline, and polygon measurements
– Automatically create and populate measurement labels and logs according to the Preferences
– New Surface Measurements include surface average slope, max slope, distance (polyline only), perimeter (polygon only), and area (polygon only)
– Polyline/Polygon Measurement Preferences
– Edit auto annotations in the Preferences and set to display on mouse hover

Visualize tab

Improved functionality enables the creation of a virtual mosaic of two or more images.

– Mosaic group allows selection of virtual mosaic type on-the-fly
– Ortho, Rigorous, Frame Rigorous, Master Affine, and Common Coordinate system

Template gallery improvements

Dockable window functionality to allow a template with labels to be applied to an image.

– Improved drop-down to include name and thumbnail
– Customize templates for subsequent use on different imagery

Draw tab reorganized

– Shapes group displays as a gallery
– Improved ToolBox functionality
– Rounded Corners option available with the Buffer tool

IMAGE LIST TOOL

Quickly and easily preview an image stack for quality, content, and comparison in a single Multiport with the Image List tool.

Ease of use

Creates an efficient workflow for cycling through multiple images within SOCET GXP.

– Single-click load of images provides access to all available exploitation functionality
– Options to reorder images by cycling forward or reverse through all images in the list
– Simultaneously preview image metadata and overview with links between the Image List Multiport and Workspace Manager Preview Pane

User preferences

Preference to maintain rotation angle or load with predefined orientation (north up, up is up, or shadows down).

– Display optional graphics
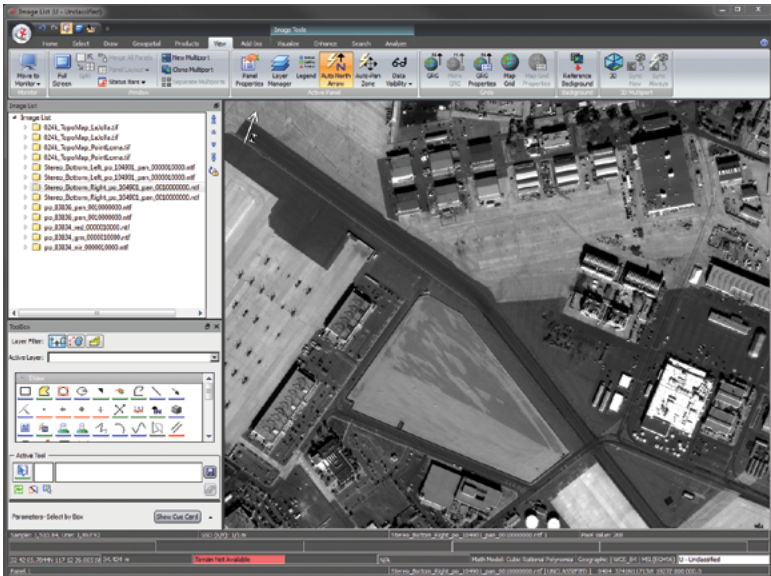
3D MULTIPORT ENHANCEMENTS

The 3D Multiport continues to revolutionize the image and geospatial analysis workflows by providing viewing options, mensuration capabilities, and product generation in a perspective that everyone understands.

Create analysis briefings

Apply product templates within the 3D Multiport.

– 3-D is fully operational while the templates are active
– Zoom, fly, move around
– Ability to create snapshot, AVI recordings, export to PowerPoint

3-D cursor

Allows for point, line, and polygon mensuration directly in 3-D.

– Surface Tracking works on terrain, features, and point clouds
– Configurable through the 3D Cursor Properties
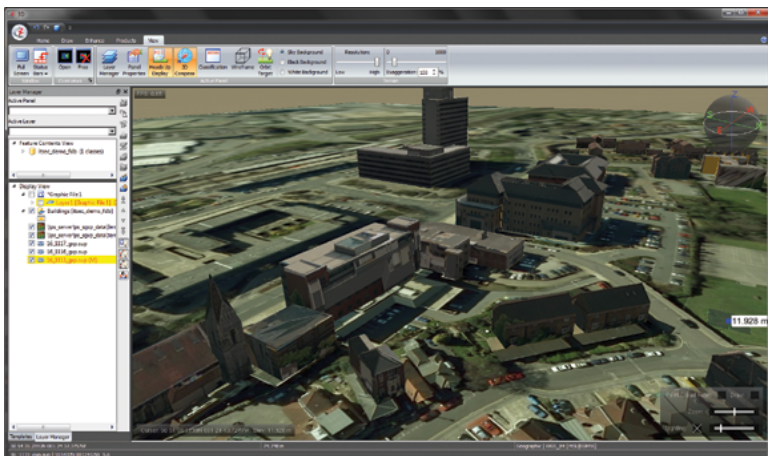– Shift-Scroll Wheel to raise/lower elevation of the cursor

3-D compass

Updates dynamically to show north, south, east, west, and Z.

3-D Height Measurement tool

Determines the height of a point using the 3-D cursor.

– Filter and profile displays for LiDAR point clouds

PRODUCT GENERATION

Image analysts and geospatial analysts have varied requirements for products generated from SOCET GXP. Accuracy and performance are fundamental to all products generated for all users.

Grid Reference Graphics (GRG) enhancements

Use default values or create a custom grid displayed over imagery to designate locations without specifying absolute georeferencing.

– Customized macro and micro grids and labels
– Letter exclusion
– Label display
– Tick marks
– New line styles

Import and export GPS tracks and routes

Navigation planning and analysis with SOCET GXP and external GPS units is vital to mission success.

– Create and edit waypoints and routes in a Multiport and export the graphics and imagery to supported GPS devices

Save as KML/KMZ directly from the Multiport

KML is the file format used to display geographic data in an Earth browser, such as Google Earth, Google Maps, and Google Mapsfor mobile.

– KML files exported from SOCET GXP can pinpoint locations, add image overlays, and expose rich data in new ways

KML is an international standard maintained by the Open Geospatial Consortium, Inc. (OGC)

Ortho Manager

Convert one or more images into an orthophoto or orthomosaic.

– Cut-in image chips for cloud removal or correction of objects such as bridges and buildings
– Save/Load shapefiles as seamlines

PRODUCTIVITY AND AUTOMATION

Multi-spectral image (MSI) analysis and other raster analysis tools such as terrain, benefit from automation in the form of converting raster analyses into vector products.

Auto-attribution of find-in-scene/colorization polygons

Raster-to-vector results are merged with feature classes to include customized attribute sets.

– Area and perimeter among other automatically populated attributes can be calculated and applied as feature attributes

### Find-in-scene/colorization raster cleanup capability

Cleanup capability fills in holes, filters out noise, and connects polygons separated by small gaps.

– Raster cleanup algorithms can be chained together to improve the results of a spectral classification or colorization

Raster-to-vector performance and quality improvements

Raster-to-vector improved algorithm creates more accurate results for spectral classification, colorization, and terrain analysis.

– Terrain analysis
– Spectral capabilities
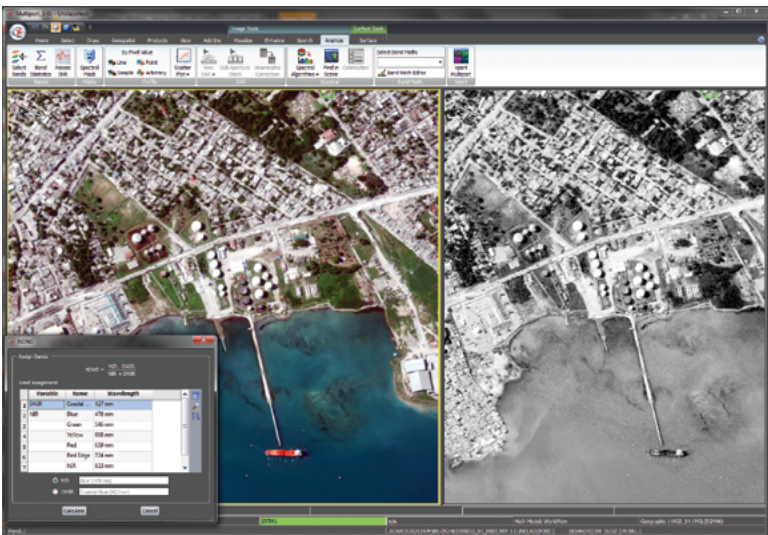
OPEN GEOSPATIAL CONSORTIUM (OGC) WEB SERVICES

The OGC Web Services provides an open specification for sharing feature/raster datasets on the Web. SOCET GXP supports connections to the Esri® ArcGIS® for Server for visualization of imagery collections, maps, and geodatabases.

Native layers supported

Multiple native layers supported within a Multiport.

– OCG layers (Web Service Layers) are treated like any geospatial data layer in the Multiport
– Transparency and roam without having to reset: reference, context, analysis, etc.
– WMS
– Web Coverage Service (WCS)
– KML/KMZ

ESRI INTEGRATION

Continued performance enhancements along with integration of Esri distributed products such as ArcGIS 10.1.

Esri Multipatch support (3-D)

Native support for creating and editing multipatch features for both SOCET GXP Spatially Enabled Exploitation (SEE) and SOCET for ArcGIS (SFA).

– The multipatch geometry type is used to define the exterior shell representation for 3-D objects

Connect to Esri

– ArcGIS 10.1/10.2* support
– ArcGIS for Server Image Extension
– Local Mosaic Dataset support
– via SDE Connection file
– Operating System Authentication (OSA)

*SOCET GXP v4.1 patch

VIDEO ANALYSIS ENHANCEMENTS

Video continues to be an exploitation data source for many revolutionary space and airborne sensors. SOCET GXP provides new capabilities for exploiting these data as streaming sources or snapped into the Workspace Manager for still frame exploitation.

– SOCET GXP Video Application Program Interface (API)
– MISB 604.1 time stamping supported
– Video file and video mission cataloging in VCT
– Enhanced, robust processing of video and video metadata
– Improved H.264 noise filtering (from LEAD)
– Use of additional CIB resolutions for reference matching in video registration
– PRESDA Tag into NITF frame export for backwards compatibility with some targeting systems
– Improved video registration
– EMAARS video support
– Video playlist
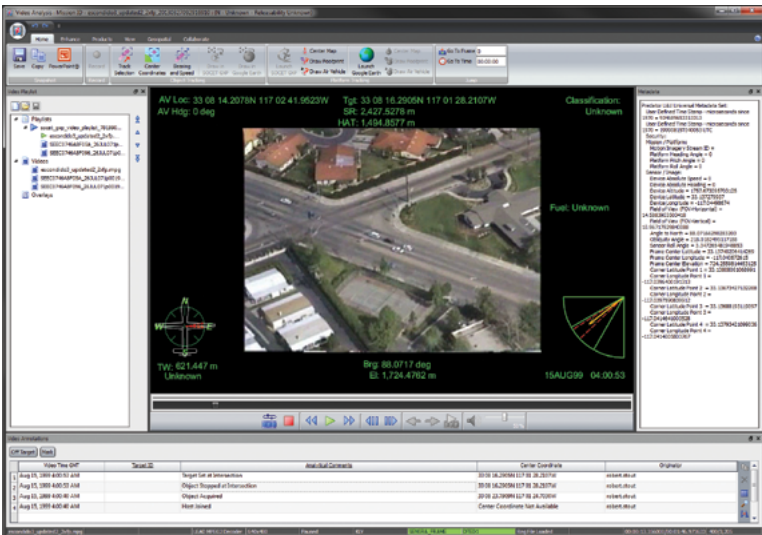
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