

EXELIS

Visual Information Solutions

Geospatial software solutions for defence and security



Geospatial Imagery and Exelis Visual Information Solutions



UNLOCK THE POWER OF GEOSPATIAL IMAGERY AND DATA

Our world can be an uncertain place to live. From natural disasters and humanitarian crises such as famine and drought, to extremist groups and hostile regimes, the defence and security communities are relied upon to produce timely and accurate intelligence to keep abreast of any situation.

Both armed forces and security organisations need to be sufficiently agile to switch from high intensity conflict to providing security at high profile public events, or delivering humanitarian aid and disaster relief. No matter the mission, situational awareness is key and modern technology, particularly geospatial technology, is increasingly being used as a primary tool.

GEOSPATIAL TECHNOLOGY IS EVOLVING

Developments in geospatial technology, remote sensing and earth observation have been rapid in recent years, resulting in an increase in defence and security applications – with geospatial data and imagery exploitation featuring in almost every operation.

The rapid proliferation of sensors used to collect imagery and data now provide analysts with multiple daily passes, higher resolution, and a variety of different specialised data types and modalities like LiDAR, SAR, hyperspectral (HSI), and multispectral (MSI).

With the increase in image and data quality, availability, and variety, comes the challenge of finding technology that can utilise the different data formats, efficiently process the ever increasing file sizes and quickly disseminate the intelligence derived from this data.

GEOSPATIAL SOFTWARE SOLUTIONS

Exelis Visual Information Solutions is a leading geospatial software company with a history of providing solutions to defence and security organisations in support of critical missions. We create a variety of bespoke and 'off-the-shelf' tools capable of integrating with popular platforms, such as ArcGIS® from Esri. They are easy-to-use, scientifically accurate and interoperable, using a wide variety of open standards like OGC and REST.

Our software tools allow all users to exploit available data to detect and understand terrain and the activities taking place on it, leading to improved situational awareness and informing faster decision making.

Solutions for tactical, operational and strategic level missions

Tools for the tactical environment

BE BETTER PREPARED WITH TERRAIN ANALYSIS TOOLS

Understanding terrain before you begin a mission – whether combat, military aid, security or any other non-conflict scenario – is essential to making effective decisions. Geospatial image analysis, exploitation and dissemination tools can provide the information you need to make mission critical decisions, such as identifying safe locations for a Forward Operating Base (FOB), determining avenues of approach, or locating an ideal Observation Point (OP) for information gathering.

We have tools, such as ENVI, ENVI LiDAR, ENVI Services Engine, SARscape and IDL, which integrate seamlessly with your existing infrastructure and workflows, and utilise your existing data types and standards, such as NITF and TFRD.

Whether you rely on formats like hyperspectral (HSI), multispectral (MSI), SAR, panchromatic imagery, or even 3D data types like LiDAR, our software tools allow you to easily process them and prepare for any mission.

Our software tools are designed to make it simple to process imagery and data in preparation for performing further exploitation tasks. Many functions can be automated, reducing the analysts' training burden and making it easy to quickly get accurate answers.



T1



T2



ENVI processing



Changes detected

Automatic Change Detection with ENVI, from very high resolution images

Geospatial analysis for operational level activity

PROTECT LIVES AND ENSURE OVERALL MISSION SUCCESS

Using geospatial analysis techniques it is possible to evaluate biodiversity, plan emergency response efforts, identify disturbed soil or stressed vegetation that might indicate enemy activity, or detect covered and concealed targets. Providing this information to troops and relief teams before they begin their mission gives them important situational awareness, helping to protect lives and ensure overall mission success.

We have solutions that allow analysts to quickly identify areas of interest, difficult terrain and potential threats, and deliver that information to the field in near real-time. So whether you need to monitor the daily activity of your Area of Responsibility (AOR), perform Hyperspectral Imagery (HSI) exploitation to reveal land damaged by natural disasters, or include image analysis results in Tactical Decision Aids (TDAs), our software can help significantly improve situational awareness, mission planning and decision making.

Solutions for strategic level operations

COLLABORATION IS KEY TO MODERN INTELLIGENCE

Defence is increasingly becoming a joint endeavour with land, maritime, air forces and security agencies being required to work together.

Significantly, most contemporary operations are combined, prosecuted by coalitions comprising many nations, meaning the ability to share imagery and intelligence easily and securely has become crucial.

We have solutions that allow analysts to quickly identify targets, potential threats or disaster zones, and supply the relevant information and data to deployed commanders and troops in near real-time.

RECEIVE AND SHARE INFORMATION FASTER THAN EVER BEFORE

With our JPIP (JPEG Interactive Protocol) streaming capabilities, users can now access the latest imagery information directly on their mobile devices, even over highly-constrained bandwidths – allowing them to perform a host of visual exploitation tasks in the field, including zooming, rotating and sharpening an image.

From off-the-shelf applications to custom integration, we have the image delivery technology you need for the most accurate and current situational awareness.

- Compress large imagery datasets using JPEG 2000 – accessible via JPIP.
- Quickly access, zoom and pan to a desired region of interest without having to receive or decompress an entire multi-gigabyte file.
- The tactical user can retrieve 1-2 per cent of a compressed file, resulting in a download time of minutes or seconds compared with hours.
- Receive and send time-sensitive image information quickly, in standard formats – using open standards – in order to make mission critical decisions.



Automated tools for exploitation and processing

We have many different tools to help you identify mission critical terrain and activity:

AUTOMATED EXPLOITATION TOOLS

Detect Change

Understand changes in terrain by comparing images from two different times. Changed areas can be highlighted and compared to images from different datasets using band ratio techniques.

Extract Features

Identify and extract features like airstrips, buildings, roads, bridges and more from a variety of data including LiDAR, MSI and HSI.

Analyse Line-of-Sight

Perform a viewshed analysis to coordinate movements or to determine potential concealed observation sites for intelligence gathering.

Anomaly Detection

Look for camouflaged or concealed targets by searching an image for statistical and spectral distinctions from the background landscape.

Lines of Communication (LOC)

Utilise 2D and 3D data to determine routes between enemy military units, their logistic chain, or the safest route in or out of a disaster area.

Material Identification

Based upon spectral signatures, find all instances of specific materials in a scene, such as camouflage nets, vehicles and equipment.

AUTOMATED PROCESSING TOOLS

Categorise Terrain (TERCAT)

Categorise terrain to create map products that let the user know what terrain is suitable, or not, for convoy movement. Terrain classifications can be automatically generated or created by user defined specifications.



Pan-Sharpen Images

Panchromatic images can be fused with multispectral data to create high-resolution colour images suitable for advanced analysis, such as material identification and anomaly detection.

Orthorectify Imagery

Geometrically correct aerial photography to compensate for image distortion due to terrain differences in preparation for further image analysis.

Atmospheric Correction

Get more accurate results from spectral analysis by removing the effects of the atmosphere on the reflectance values of images taken by satellites or airborne sensors.

Image Registration

Transform different sets of data into one coordinate system to ensure your image has a consistent scale. Data may be from multiple photographs, different sensors, different times or different viewpoints.

Data Fusion

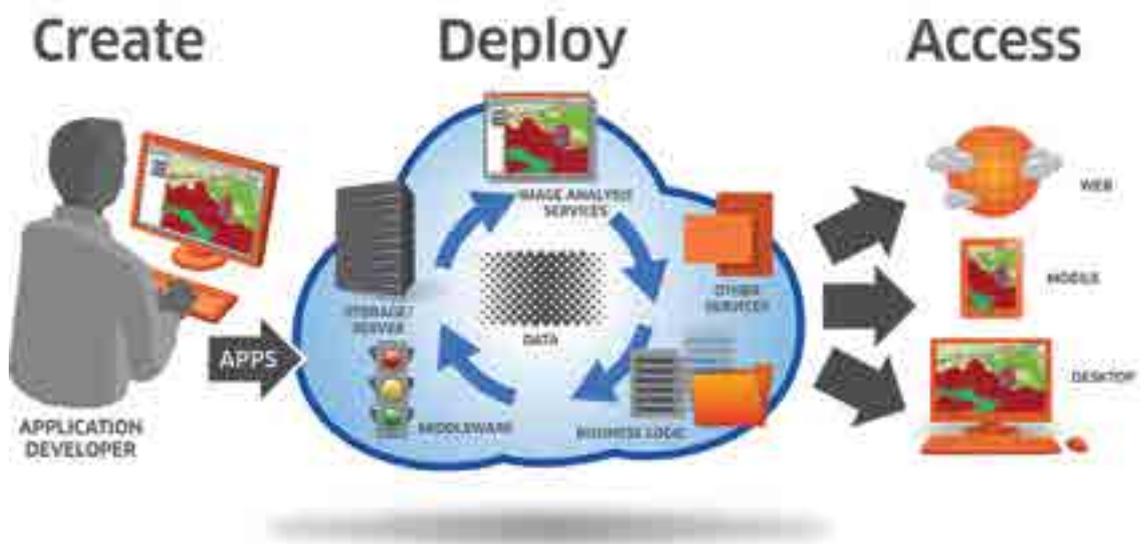
Fuse multiple data types together to get a more information-rich geospatial product to better support mission needs.

ENVI Services Engine

Geospatial awareness – online and on-demand

With ENVI Services Engine your entire organisation has online, on-demand access to the geospatial data and information they need to efficiently make strategic decisions – regardless of their location.

The design of ENVI Services Engine allows an app developer to build customised applications in a number of different programming languages that leverage the power of ENVI image analysis algorithms for consumption via web, mobile and other handheld devices.



ENVI Services Engine is built on RESTful architecture and can be integrated into any existing web architecture.

BENEFITS:

- **Remote Access:** Run complex, intensive analysis on large datasets from smartphones/tablets via the web. The need for high-powered, localised clients is eliminated.
- **Resource Considerations:** Perform faster, more frequent updates with ENVI Services Engine's cloud-based solution. Easily manage licensing and storage needs.
- **User Collaboration:** Provides consistent and repeatable processes across your organisation, allowing you to create custom workflows for use by non-technical, remote users.

Why choose Exelis Visual Information Solutions?

THE SUPPLIER OF CHOICE FOR THE DEFENCE AND SECURITY COMMUNITIES

Defence and security communities across the globe turn to us time and again to receive the latest image and data analysis technologies, from our ENVI software solutions to fully bespoke implementations.

Bespoke solutions are carefully defined and developed by our highly-experienced consultants from Consulting Services, a team focused on helping you get the actionable intelligence you need.

INTEGRATION WITH EXISTING WORKFLOWS

Our software can be customised to allow you to exploit available geospatial information to analyse the terrain and all detectable activities you encounter using your preferred method and algorithms. Virtually any data, regardless of its modality, is available for you to use (EO, IR, HSI, MSI, SAR, LiDAR), while our image and data analysis software is capable of working alongside your existing software.



ENVI

The premier software solution for processing and analysing geospatial imagery. Used by everyone from GIS professionals to image analysts and scientists, regardless of prior experience.



JPIP STREAMING CAPABILITIES

We provide rapid image delivery technology that gives you real-time access to the geospatial imagery you need for critical decision making.



ENVI LiDAR

The interactive geospatial software environment. Allows the user to create powerful, realistic 3D visualisations, and extract features and products from LiDAR data.



ENVI SERVICES ENGINE

Cloud-based image analysis solutions to create, publish and deploy advanced ENVI image and data analytics to any existing enterprise infrastructure.



IDL

IDL is the trusted, modern scientific programming language that lets users transform data into dynamic and meaningful visual representations.



CONSULTING SERVICES

Our Consulting Services team can help solve the most complex technological issues through the use of geospatial imagery and scientific data.

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