ENVI® LiDAR

The interactive software environment for extracting 3D information from LiDAR data.
Today, geospatial data is commonly used to help professionals across industries find answers to problems that previously required time consuming field work. Crucial information can be extracted from geospatial data using advanced analysis software to address challenges from monitoring the effects of urban development to selecting optimal locations to set up forward operating bases for the military.

Geospatial imagery has traditionally come from two-dimensional imagery and data. However, professionals today increasingly utilize three-dimensional sources of information, such as LiDAR data, to render realistic 3D visualizations, extract 3D features, and create elevation products that enhance the information derived from two-dimensional data sources. You need a software tool that takes advantage of the elevation information in LiDAR data and one that is interoperable with the other geospatial tools you already use, such as ENVI® image analysis software and the ArcGIS® platform from Esri.

ENVI LiDAR is an interactive geospatial software environment that allows you to create powerful, realistic 3D visualizations and easily extract important features and products from LiDAR point cloud data. The important elevation information contained within LiDAR can now conveniently be included in your geospatial products such as line-of-site assessments, forest inventories, and right-of-way analyses. With ENVI LiDAR, you have the software tool you need to quickly prepare LiDAR data, accurately extract 3D features, fine-tune results, and export your results for further analysis and inclusion in your geospatial products.
ENVI LiDAR utilizes LiDAR data to create realistic 3D visualizations, extract 3D features, and export products and layers for further analysis or inclusion in your mapping applications.
The accuracy of LiDAR technology has made it possible to map large geographic areas with a level of detail that was previously only possible with time-consuming and expensive ground surveys.
WHAT IS LiDAR?

LiDAR (Light Detection and Ranging) is a remote sensing technology that uses light pulses to measure the distance between a sensor and reflecting objects such as the Earth’s surface, buildings, and trees. The result is a collection of data points called a “point cloud” that are used to precisely render 3D shapes and accurately locate features in a scene. The accuracy of LiDAR technology has made it possible to map large geographic areas with a level of detail that was previously only possible with time-consuming and expensive ground surveys. These benefits have led organizations to use LiDAR data as a source of information when mapping and making decisions critical to their business.

Because organizations use LiDAR data more frequently to solve problems, there is an increased demand for LiDAR processing and analysis software such as ENVI LiDAR. With ENVI LiDAR, a user can utilize the large datasets associate with LiDAR to create realistic 3D visualizations, extract 3D features from a scene, and produce 3D products and layers that can be exported for further analysis. Information extracted from LiDAR data is frequently used to enhance geospatial products. With the elevation information in LiDAR, it’s now possible to determine a safe helicopter landing zone by mapping the height and location of trees, buildings, and power lines. Additionally, you can increase the accuracy of your right-of-way analyses, forest inventories, and DEMs by utilizing LiDAR.

WHY SHOULD I USE LiDAR?

LiDAR data provides highly accurate elevation information and adds a new dimension of information to your geospatial products. LiDAR data can be analyzed in conjunction with 2D data sources such as hyperspectral, multispectral, and panchromatic imagery, providing essential elevation information for your geospatial analysis. When LiDAR data is used with other imagery sources, the resulting product provides more information than ever before.
Professionals across industries use LiDAR data to enhance their understanding of the geospatial information they use to make critical decisions. Whether applying LiDAR data to defense and intelligence, civil planning, natural resource management, or geological exploration, ENVI LiDAR allows users to create realistic 3D visualizations, extract 3D features, and export products and layers to help them understand the world around them.

Because ENVI LiDAR utilizes LiDAR data, the products you create provide highly accurate elevation information that was previously difficult to determine using traditional 2D imagery. With ENVI LiDAR, it's easy to create a digital elevation model (DEM) or digital surface model (DSM) to get the information you need to perform terrain and line-of-site assessments, create forest inventories, extract building footprints, or even determine vegetation encroachment on power lines.
ENVI LiDAR allows users to create realistic 3D visualizations, extract 3D features, and export products and layers to help them understand the world around them.
ENVI LiDAR allows you to quickly and easily identify and create 3D products that can be fused with traditional 2D imagery for further analysis or inclusion in your GIS.
ACCURATE RESULTS HELP YOU MAKE BETTER DECISIONS.

In the past, understanding the exact height and dimension of manmade and natural objects often required field analysis that cost organizations time and resources. The ENVI LiDAR workflow allows you to transform your point cloud data and extract essential information for your geospatial applications without leaving the office. Beginning with data preparation, ENVI LiDAR allows you to quickly and easily identify and extract 3D features, refine your results, and export 3D products that can be fused with traditional 2D imagery for further analysis or inclusion in your GIS.

PREPARE 3D DATA FOR GEOSPATIAL ANALYSIS

When analyzing 3D data, limited file support and data ingest constraints often cause you to spend more time than necessary preparing your data for analysis. With ENVI LiDAR the most commonly used file formats such as LAS, ASCII, NITF LAS, and binary are supported, so you can rapidly access and ingest your LiDAR data. Additionally, ENVI LiDAR can simultaneously ingest multiple data files, giving you more time to identify features and analyze results.

IDENTIFY AND EXTRACT 3D FEATURES OF INTEREST

Traditional methods of identifying features of interest such as building footprints, trees, power lines, and power poles were complex and time consuming due to the cost and time commitment of sending employees to remote locations to collect elevation and location information. ENVI LiDAR allows you to find features of interest utilizing LiDAR data through automated feature identification with manual tools for quality control. Feature identification can be performed on an entire point cloud scene or a user defined subset of a scene – providing you with accurate information for less money and in a fraction of the time.

REFINE 3D FEATURE EXTRACTION RESULTS

3D feature extraction results often need to be refined to ensure that individual features are accurately identified, or to correct attributes to ensure the visualization is true to life. To refine results in ENVI LiDAR, fly through a realistic scene looking for specific data points or individual features that need editing. Editing features in ENVI LiDAR is easy; simply click specific data points and modify their identification. Refine results by smoothing, reclassifying points, or by modifying individual features such as the shape of structures, the number of trees, and the location of power poles and power lines.
Results from your 3D analysis are easily exported as products or layers that can be fused with 2D data to perform additional geospatial analysis, included in your GIS for mapping applications, or even provided to colleagues as a “project” that can be viewed without a license of ENVI LiDAR. Topographic products and layers generated in ENVI LiDAR can be exported in formats such as a standard raster, a .csv file, or in GeoTIFF, LAS, and SHP file formats.

**ADD ADDITIONAL CONTENT TO GIS MAPPING APPLICATIONS**
such as building footprints, tree crown height, or terrain slope to your GIS mapping applications.

**INCLUDE 3D INFORMATION IN YOUR GEOSPATIAL IMAGE ANALYSIS**
such as models of terrain, buildings, or trees as raster or vector layers.

**UTILIZE ELIVATION INFORMATION FROM LIDAR DATA**
in a variety of industries from forestry and mining, to defense and intelligence to get the 3D spatial information you need to make decisions.
ENVIRONMENTAL INFORMATION 

ENVI LiDAR INTEGRATES WITH THE SOFTWARE TOOLS YOU ALREADY USE

The flexibility of ENVI LiDAR allows you to use results in a variety of geospatial tools like ENVI image analysis software or ArcGIS® from Esri. To perform additional analysis on your exported 3D products, ENVI LiDAR provides an easy to use direct link to automatically open your ENVI LiDAR results within ENVI or ArcGIS. Once your ENVI LiDAR results are in ENVI or ArcGIS, you can now enhance your geospatial analysis using the workflows you already use within these products. When ENVI LiDAR elevation and feature extraction results are used in conjunction with other geospatial software tools, you can add more information to your geospatial products than ever before.

CONTROL, EXTEND, AND AUTOMATE ENVI LiDAR FUNCTIONALITY

Like all products in the ENVI Platform, ENVI LiDAR has an API that allows you to customize the application to meet the unique needs of your organization. With the ENVI LiDAR API, it’s easy to add your own algorithms, create batch processes, add custom tools, and more. This unique ability means that your software functionality can extend to meet the demands of today and the future. Additionally, if you don’t have the resources, or in house expertise, our Professional Services team can help you quickly customize ENVI LiDAR to satisfy your requirements.
INTERNATIONAL SUPPORT

Exelis Visual Information Solutions is a global company with direct offices in North America, Europe, and Asia. Combined with our extensive, worldwide distributor network, we can support your geospatial needs regardless of your location.

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