



# ITT

## Visual Information Solutions

### OrbiSat da Amazonia S.A. Uses ENVI and IDL to Create Maps of Regions of Interest

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#### Customer Challenge

Governments and commercial businesses around the world increasingly need up-to-date, specific information about geographic areas of interest in order to make informed and accurate decisions. Today, this information comes in the form of remotely sensed imagery, which provides essential data about virtually anything occurring on the Earth's surface and is used in applications ranging from disaster response to environmental conservation.

To obtain the updated information they need, organizations often turn to OrbiSat da Amazonia S.A., a Brazilian technology company that provides customers with detailed geographic information using its airborne interferometric radar, OrbiSAR, for remote sensing. In order to meet the full breadth of their customers' requirements, OrbiSat needed a way to extract critical information from their remotely sensed data so that they could provide customers with the accurate information needed to make important decisions.

#### Solution Achieved

OrbiSat's large customer base, which varies from local municipal governments to international oil and gas companies, has specific needs for remotely sensed data. These customers usually request detailed information such as biomass density, border definition, and effects of natural disasters from regions in the world that are frequently covered by clouds and other atmospheric conditions, and have a dense forest canopy, like the Amazon. To overcome these natural barriers, OrbiSat flies aircraft equipped with radar technology capable of scanning and gathering ground data in almost any condition.

OrbiSat has developed a solution to supply their customers with the valuable information remotely sensed data can provide. After its aircrafts have collected radar data, OrbiSat sends it to its offices where a team of developers use IDL to transform their customers' data into dynamic visual representations, so that they can be further analyzed. IDL is uniquely suited to create graphic visualizations from complex data sets such as that obtained with airborne radars. Creating visualizations from data makes it easier to analyze and extract information from the data. "We use IDL because it makes creating high-quality graphics from complex data easy," says Rafael Rosa, Software Development Manager at OrbiSat.



OrbiSat's team then takes the analysis output from IDL in the form of an image, and loads it into ENVI for additional analysis. ENVI combines the latest spectral image processing and image analysis capabilities in a user-friendly interface. ENVI's pre-built image analysis tools enable OrbiSat to quickly, easily, and accurately extract information from imagery. "Using ENVI, we are able to extract the exact information requested by our customers," says Rosa.

Many of OrbiSat's customers request thematic maps that clearly highlight specific information about areas of interest. One such customer was the Brazilian Army, which requested that OrbiSat find and map the wreckage of an airplane strewn about the Amazon Rainforest after having crashed. To accomplish this task, OrbiSat gathered radar data from the crash area, used IDL to create images, and then analyzed the images in ENVI, searching for textural differences on the ground that proved to be a good indicator of the plane's wreckage.

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- Rafael Rosa  
Software Development Manager, OrbiSat

Other OrbiSat customers want custom image analysis applications that they can use themselves to process and analyze their own data and imagery. As these customer needs arise, OrbiSat uses IDL to modify and add tools to ENVI so that the customers can extract the information they need to make important, timely decisions. Because IDL is the underlying programming language to ENVI, OrbiSat can easily customize and extend ENVI's image analysis tools based on specific customer needs. "We have found it easy to customize ENVI and create powerful applications for our customers using IDL's intuitive and flexible syntax," says Rosa. To date, OrbiSat has created almost 400 customized image analysis programs for customers.

Both customers who have OrbiSat analyze imagery and those who use custom built applications to perform their own image analysis increasingly request that extracted information be included in a GIS. Adding information extracted from imagery to a GIS provides a complete picture of a geographic area of interest that includes pertinent, current information. Tools in ENVI allow both OrbiSat and their customers to seamlessly perform this task, updating ArcGIS with this information using a streamlined workflow.

"We are always trying to improve our products and provide our customers with accurate information about an area of interest in a timely manner so that they can make critical decisions" says Rosa. "This is why we use IDL and ENVI. The technology is advanced, yet it is easy to use and easy to customize."

## Key Benefits

- Using IDL, OrbiSat is able to quickly and easily transform radar data into dynamic visual representations that can be easily analyzed in ENVI.
- Since ENVI is written using IDL, OrbiSat can customize its advanced image analysis tools and add additional features and functionality.
- OrbiSat can quickly update ArcGIS with information extracted from imagery using streamlined workflows in ENVI.



To find out more about ENVI today call 303.786.9900 or visit [www.ittvis.com/ENVI](http://www.ittvis.com/ENVI).