



## Geo-Managing Mining

The Geological Survey of Tanzania (GST) is a national geological research centre operating under the Ministry of Energy and Minerals and is responsible for the acquisition and storage of geoscientific data and information used in the mineral resources sector and other sectors of the economy. GST is active in promoting mineral exploration and mining in Tanzania through activities such as geological mapping, mineral exploration, evaluation, processing, and research work on geological processes and mineral systems. GST'S vision is to evolve as a Centre of Excellence providing national geoscientific data and information for use in the evaluation and sustainable utilization of natural resources.

### The Challenge

The Geological Survey of Tanzania had been conducting geo-surveys and research activities in the country for the past 80 years, thereby generating a substantial amount of geoscientific data and information on Earth's crust and its natural resources. This information included, vast geological, airborne geophysical, satellite imagery and geochemical information. Given the amount of data generated, there was dire need for a solution that accurately analyzed this data to efficiently pinpoint the location of potential mineral outcroppings, monitor active and inactive mines, monitor and understand broad environmental impacts.

### What They Did

The ultimate goal of mining firms is to stay profitable, to do this they rely on a variety of robust tools and technologies, to keep pace with the complex demands of modern mining operations. In this regard, Geological Survey of Tanzania adopted Geospatial Information Technology, by procuring **ERDAS IMAGINE Professional**. ERDAS Imagine is an image processing software, which has proved to be critically important increasing productivity in mining field projects.

Using the vast amount of data and information such as, satellite imagery, geophysical and geochemical datasets of the mining areas of interest they have, users of the ERDAS IMAGINE software at GST were able to optimize mine planning and operations, monitor the mine landscapes and employ powerful modelling that automate specialized mining workflows.

## Success Story

### Organization

Geological Survey of Tanzania

### Location

Dodoma, Tanzania

### Industry

Natural Resource

*ERDAS IMAGINE is an easy-to-use, raster-based software designed Specifically to extract information from images. Perfect for beginners and experts alike.*

*ERDAS IMAGINE enables you to process imagery like a seasoned professional, regardless of your experience in geographic imaging.*

Figure 1: The ERDAS IMAGINE interface displaying a 3D view of a mine site



## Why You Need This Too

ERDAS IMAGINE provides true value, consolidating remote sensing, photogrammetry, LiDAR analysis, basic vector analysis, and radar processing into a single product. ERDAS IMAGINE offers you one comprehensive solution for all of your geographic imaging and image processing needs. It simplifies and streamlines your production workflow, saving you time, money, and resources without sacrificing accuracy. The ERDAS IMAGINE Software from Oakar Services provides the Geological Survey of Tanzania with valuable service and benefits such as:

**One stop shop:** ERDAS provides a number of tools and functionalities that allow one to perform Image processing, Image analysis, and Geoprocessing (GIS) tasks.

**3D Visualization:** Whether open pit or underground, ERDAS allows one to see the mine as it really is by integrating imagery, LiDAR, radar, and GIS data into advanced analysis and powerful 3D visualization tools.

**Reliable Compression:** ECW and JPEG2000 compression accelerates your data preparation, storage, and distribution processes, increasing the amount of data you can easily manipulate.

**Modeling capabilities:** with the Model Maker (an object-based graphical geospatial data modeling tool) and the Spatial Modeler (a new generation, object-based graphical geospatial data modeling tool) one can make solid plans, calculations and understand the extent of environmental impacts.

**Image enhancement tools:** ERDAS allows one to perform spatial, radiometric and spectral enhancement, including pan sharpening and band rationing to highlight aspects not easily discernable visually.

**Radar Capabilities** with real-time georeferencing for most commercial sensors including RADARSAT 2, TerraSAR-X, COSMO SkyMed, SkyMed, RISAT-2, Kompsat-5, Alos PaLSAR-2 and TanDEM-X with tools for visualization, edge enhancement, adjustment and Radar conversions.

**Terrain Preparation tools** for creation and manipulation of terrain datasets, read LAS, ASCII, raster, vector, and breakline data, and output terrain files in various formats; split or merge terrain files; preprocessing options including terrain point thinning and filtering and generation of contours with options for contour smoothing.

**Image classification tools:** ERDAS provides tools for performing supervised and unsupervised classification for obtaining land cover maps to guide field crews in their missions.