**HEXAGON**

IMAGINE SAR Feature Extraction

IMAGINE SAR Feature Extraction lets users produce actionable information that can be passed up the decision-making chain of command. It minimizes and automates the radar analyst workload to create an information product from synthetic aperture radar (SAR) imagery. The product can be a refined/enhanced radar image, target or change image-map, extracted feature image or a shapefile and associated attributes, if desired.

The interactive, operational workstation allows analysts to optimize SAR image processing and viewing in real time. Easily modify advanced SAR algorithms, view results and optimize rapid enhancement. Functionality can be combined with the full image to convert radar imagery from any sensor into industry-standard information products. As an add-on module, the workstation can be fully integrated with ERDAS IMAGINE.
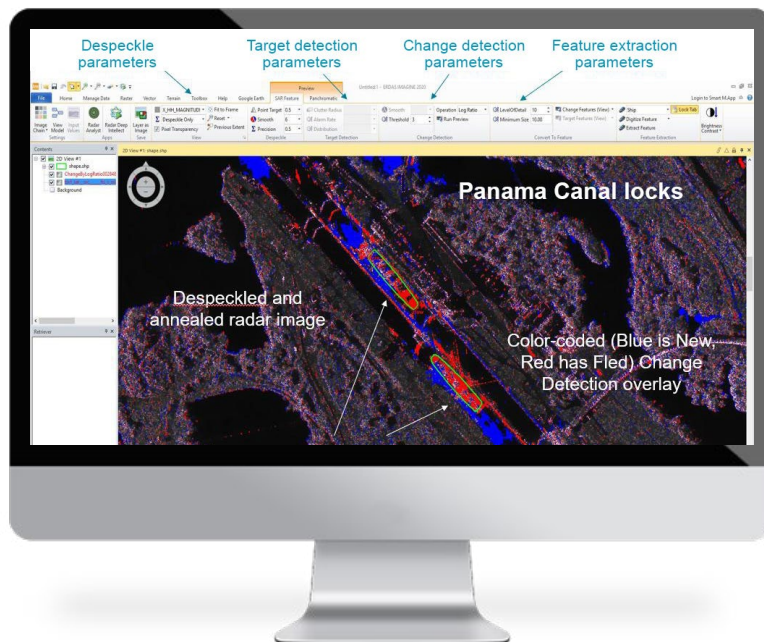
Optimize SAR image processing and view results in real time.
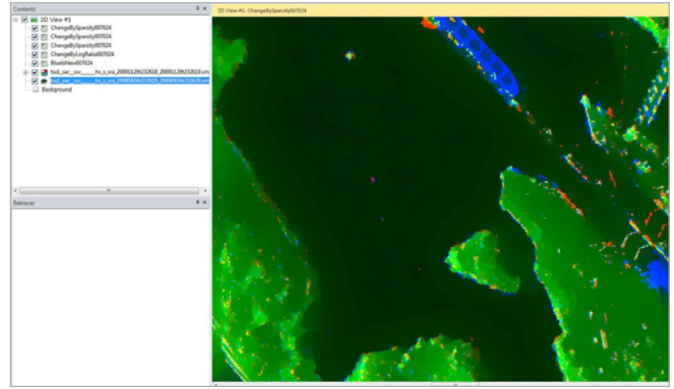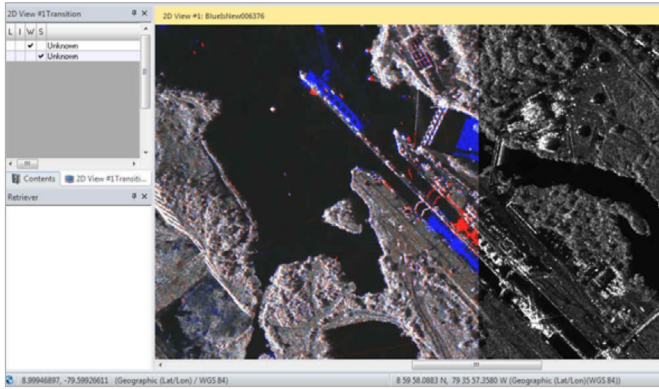
Evaluate the change detection product by using the zoom, swipe and pan tools in ERDAS IMAGINE. The original radar image is on the right; despeckled change detection image on the left.

Features

Despeckle: Speckle suppression reduces noise in the SAR imagery to facilitate visual interpretation or the automated feature extraction functionalities.

Target detection: Converts a despeckled radar image into a binary target/not a target image using constant false alarm rate algorithms.

Change detection: Map change between two images with different dates over the same geographic area. Multiple algorithms color-code the change using the blue-is-new, red-has-fled paradigm. Features new to the scene (new) are blue and features that have disappeared from the scene (fled) are red.

Raster to vector: Convert any image product created in the workstation to vector shapefile format for easy information transmission and dissemination.

Feature extraction: Extract ship profiles using template-matching technology, or roads using artificial intelligence and save as a shapefile with the desired vector symbology.

You can run progressive iterations of any of the enhancement or detection algorithms until you arrive at an optimum product for your needs. This extremely smoothed adaptive change detection image has no distracting despeckle noise. Recipients with little to no experience analyzing radar imagery can easily understand the information, such as the red (fled) and blue (new) ships in the canal locks.

Deep learning

The SAR Feature Extraction module now includes deep learning feature extraction technology. Present functionality includes despeckle and road extraction.
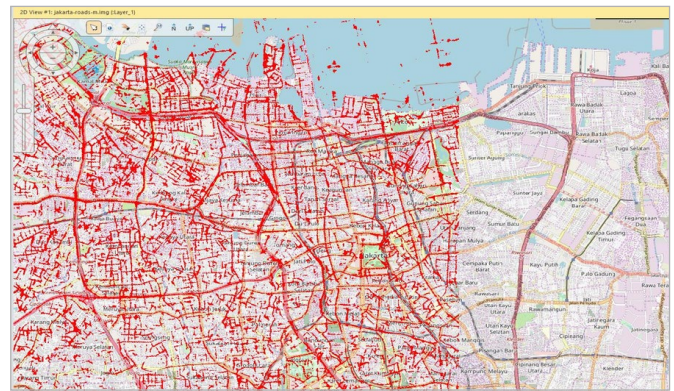
Swipe view shows radar-extracted roads (red) on the left, overlaying a cartographic road map of Jakarta, Indonesia.

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