

TRIMBLE eCOGNITION

eCognition® Developer

Release Notes

Version 9.1

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Trimble Documentation

eCognition 9.1

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Imprint and Version

Document Version 9.1.0

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Acknowledgments

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Day of print: 31 March 2015

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1 Overview

1.1 About eCognition Suite

Trimble® eCognition® Suite is an advanced analysis software available for geospatial applications. It is designed to improve, accelerate and automate the interpretation of a variety of geospatial data and enables users to design feature extraction or change detection solutions to transform geospatial data into geo-information.

eCognition imports a variety of geospatial data, fusing them together into a rich stack of geo-data for the analysis. The analysis logic is structured into series of steps to create a computer-based representation of an expert's geospatial interpretation process a so called Rule Set. eCognition then combines the analysis logic with scalable computing power to identify changes over time or features on the earth's surface across very large sets of data.

eCognition Suite version 9.1 is a major release and includes a range of new features and bug fixes. We recommend upgrading to this new version to benefit from the new features and improvements. Please refer to chapter [eCognition Suite 9.1 Highlights, page 7](#) for an overview of the highlights. A complete list of new features and bug fixes can be found in chapter [New Features - Bug Fixes and Limitations, page 8](#).



1.2 Key Features

Building Analysis Solutions

The eCognition technology examines image pixels not in isolation, but in context. It builds up a picture iteratively, recognizing groups of pixels as objects. Just like the human mind, it uses color, shape, texture, shape and size of objects, as well as their context and relationships, to draw the same conclusions that an experienced analyst would draw.

To build an analysis solution, it is possible to flexibly combine the image interpretation steps like object creation (segmentation), object classification (knowledge based, fuzzy logic, machine learning), object detection (template matching) and object modification (fusing, smoothing, orthogonalization, simplification) into a Rule Set or even a new application (Rule Set with UI) to solve the analysis problem.

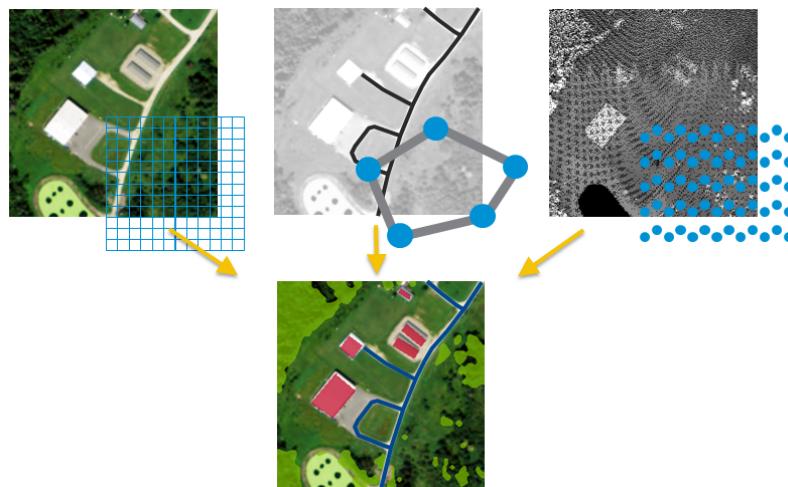
The result is a unique approach to translate mind models (why a human interpreter can see the objects, changes, or features in the geospatial data) into computer understandable code (Rule Set) or an individual/customized application.



Leveraging Data Synergies

eCognition can fuse a variety of geospatial data, such as spectral image data, 3D structure data from point clouds and spatial/thematic data from GIS vectors.

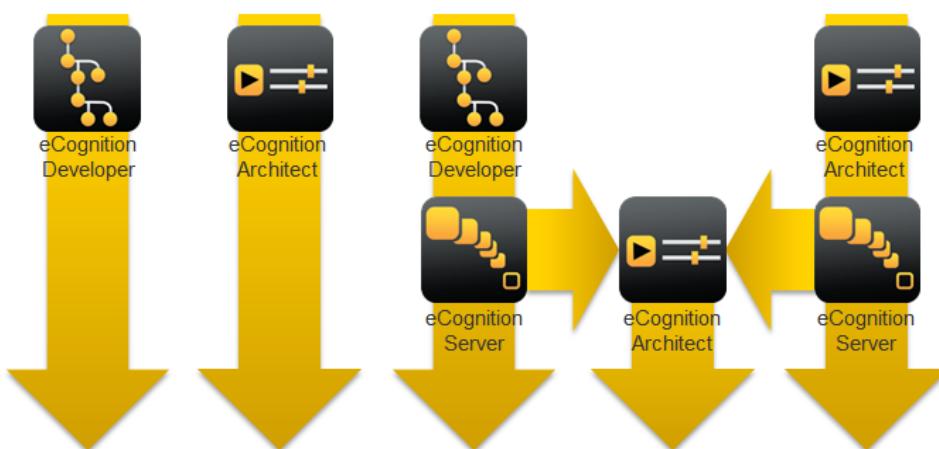
The proximity of eCognition to GIS, its ability to link and fuse the available data in an analysis - combined with the straightforward export of results to GIS layers - help eCognition users to achieve outstanding results.



Efficient workflows

The eCognition Suite offers three different components which can be used stand-alone or in combination to solve even the most challenging fully automatic and semi-automated production tasks:

- eCognition Developer is the development environment for object-based image analysis. It is used in geospatial industry to develop Rule Sets or applications for eCognition Architect for the automatic analysis of geospatial data.
- eCognition Architect enables non-technical professionals such as vegetation mapping experts, urban planners or foresters to leverage eCognition technology. Users can easily configure, calibrate and execute analysis applications (Rule Set in combination with a UI) created in eCognition Developer.
- eCognition Server software provides a powerful processing environment for batch and parallel execution of analysis jobs, based on Rule Sets or applications.



1.3 eCognition Suite 9.1 Highlights

eCognition 9.1 has been enhanced with capabilities to more efficiently generate intelligence from images and point clouds acquired by aerial, spaceborne, UAS-based or mobile mapping platforms. Enhancements include: multi-core processing to reduce production bottlenecks; more efficient use of GIS-Data; improved handling of ground truth data for supervised classification; easier packaging and installation of customized eCognition applications; advanced support of mobile mapping data.

Performance improvements removing bottlenecks in processing time

With a performance improvement of up to 40-50% a key bottleneck has been removed allowing users to faster produce results. By implementing multi-core processing for up to four cores, users benefit from a reduced processing time for “Multiresolution Segmentation” on a 30,000 by 30,000 pixel image from appr. 100 minutes to appr. 60 minutes using 4 CPU cores instead of 1. On a 15,000 by 15,000 pixel image, processing time has been reduced from appr. 22 minutes to appr. 11 minutes.

Better utilization of GIS-Data in image analysis workflows

The capabilities of the eCognition development platform to utilize GIS-Layers in object-based image analysis workflows have been enhanced. Remote Sensing Professionals and GIS Analysts can now more effectively utilize pre-existing GIS data with new software functions like polygon to line, polygon to point or line to point conversions, buffering or using distance features.

This further integration of GIS-techniques into current image analysis workflows supports the dynamic combination of image and GIS analysis capabilities on a high level of automation which help reducing project turnaround times.

Robust and accurate classification results

eCognition users can now combine, extend and transfer multiple ground truth data sets from various locations in order to generate robust and accurate supervised classification results. This allows users to generate a re-usable library of properties to be used for object-based supervised classification workflows inside eCognition.

Packaging and installation of customized eCognition applications

Users who have developed customized applications can now better package such applications and integrated them into the installation routine of the eCognition Architect client. This allows an easier roll out and commercialization of eCognition-based applications.

Enhanced mobile mapping support for Trimble MX2 and Trident

Data from the Trimble MX2 mobile mapping system that uses the Ladybug spherical imaging system now can be used to create solutions with the eCognition Developer. In order to achieve a better classification granularity supported by the Trimble Trident software, the total number of available LiDAR classes has been extended to 256.

2 New Features - Bug Fixes and Limitations

2.1 New Features

New Features in eCognition 9.1:

Story	Feature	Description
Application Development	Improved dialog: 'edit widget'	Widget type is now displayed in edit widget dialog
Application Development	Improved widget: 'select multiple features'	Widget now allows use of predefined features and feature arrays in addition to feature lists
Application Development	Improved widget: 'select multiple features'	Widget now includes an option to show image layer names (instead of only image layer variable names)
Application Development	New architect process callback: 'on change active pane'	Application developer can now define a ruleset path to be executed when the active pane changes.
Application Development	New application template folder	Allows users to generate and deploy their own applications
Application development	Improved algorithm: 'set custom view setting'	New options 'zoom in center', 'zoom out center', 'center image at X' and 'center image at Y' available
Application development	Improved algorithm: 'start thematic edit mode'	New option: 'rectangular thematic objects' only allows drawing of rectangles rather than generic polygons
Application development	Improved algorithm: 'finish thematic edit mode'	New option to save thematic layer as temporary layer
Application development	Improved algorithm: 'select input mode'	New option to select thematic object
Application development	New feature: 'active pane number'	Shows the index of the currently active (selected) pane

Application development	New feature: 'feature variable name (evaluated)'	Shows the name of a feature, displaying the content of class variables and layer variables (if present in the feature name)
Architect	Improved Architect: automatic library selection	Correct library in program installation folder is opened when a corresponding project or solution is opened
Architect	Improved Architect: tooltips for disabled widgets	Tooltips are displayed now also for disabled widgets
Classification	New algorithm: 'update classifier sample statistics'	Create, update, validate or clear a classifier sample statistics based on an image object domain, or load it from a file.
Classification	New algorithm: 'export classifier sample statistics'	Export the classifier sample statistics to a file
Classification	Improved algorithm: 'classifier'	Train the classifier based on the classifier sample statistics
Classification	New feature: 'classifier sample statistics data count'	Shows the number of entries in the classifier sample statistics table
Classification	New feature: 'classifier sample statistics classes'	Shows the classes represented in the classifier sample statistics table
Classification	New feature: 'classifier sample statistics feature space'	Shows the features represented in the classifier sample statistics table
Classification	New ruleset option: 'Store classifier training data with project/ruleset/solution'	If activated the classifier training data is stored as a satellite file with the project/ruleset/solution
Data import	New driver: *.pgr files	Ladybug videos can be imported into eCognition
Data import	Improved predefined import for MX8/MX2	Support of split point clouds and support of MX2 data
Data import	New predefined import: 'Inpho UASMaster'	Convenient import of UASMaster exports
Layer processing	New algorithm: 'pixel filter 2D (prototype)'	Applies different pixel-based filters: gaussian, mean, median, bilateral or morphology
Native vector handling	New feature: 'area' (for vectors)	Shows the area of a polygon vectors

Native vector handling	New features: 'x center' and 'y-center' (for vectors)	Shows the center coordinates of vectors
Native vector handling	New feature: 'perimeter' (for vectors)	Shows the perimeter of polygon vectors
Native vector handling	New feature: 'length' (for vectors)	Shows the length of line vectors
Native vector handling	New feature: 'distance to vectors' (for vectors)	Shows the distance of a vector to another vector
Native vector handling	New feature: 'number of vector objects in thematic layer (map)'	Shows the number of thematic vector objects on a map
Native vector handling	New domain: 'current vector'	Allows looping over all vectors in a layer
Native vector handling	New feature: 'distance to vectors'	Shows the distance of an object to a vector
Native vector handling	New algorithm: 'convert polygon vectors to line vectors'	Converts polygon vectors to line vectors
Native vector handling	New algorithm: 'convert polygon/line vectors to point vectors'	Converts polygon and line vectors to point vectors
Native vector handling	Improved algorithm: 'write thematic attribute'	Domains 'vectors' and 'current vectors' now available
Native vector handling	New algorithm: 'vector buffering'	Grows vectors by specified distance
Performance	Improved algorithm: 'multiresolution segmentation'	The algorithm 'multiresolution segmentation' now uses up to 4 cores
Point clouds	Improved filter: lidar classes	Users can now select up to 256 lidar classes in all relevant features and algorithms
Segmentation	New algorithm: 'watershed segmentation'	Creates and image object level according to the watershed algorithm
Usability	Improved feature: 'Resolve path'	{:Desktop.Dir} represents the path to the user's desktop (Windows only)
Usability	Improved 'process tree' context menu	When a breakpoint is reached, 'continue' causes

		ruleset execution to proceed until next breakpoint.
Usability	Improved dialog: 'edit vector layer mixing'	Option to change width of vector outlines

2.2 Bug Fixes

The update includes the usual bug fixes and improved performance and system stability.

Bug Fixes in 9.1:

Reference	Description
ECOG-2713	User configuration not stored when starting software from start menu
ECOG-2694	Cannot overwrite LAS-files via Server with Image Proxy Server on
ECOG-2680	Deleting a node from a polygon: selected (not highlighted) node is deleted
ECOG-2673	Delete layer algorithm permanently deletes temporary layer from project even if project was never resaved
ECOG-2666	Changing layer mixing in set custom view settings algorithm should clear false rainbow layer mixing etc.
ECOG-2665	Y and X Min/Max coordinate feature error
ECOG-2659	Image Object Level name display does not update correctly
ECOG-2650	Send command id > open layer mixing > manual > parameter => eCognition becomes unresponsive
ECOG-2644	Thematic attribute comparison ">" does not work
ECOG-2633	Developer crashes when algorithm parameters changed in Process Properties window
ECOG-2621	Some vector OBIA algorithms have different results on Linux
ECOG-2609	Inappropriate error message "cannot cancel user job" when rolling back workspace
ECOG-2599	Action Library: radio button gets released directly after pressing on it
ECOG-2572	Vector layers get confused when projects are in same folder
ECOG-2571	Edit Vector Layer Mixing: scrolling does not work for more than 14 layers
ECOG-2526	Create temp vector layer algorithm does not work if original layer is modified

ECOG-2519	eCogLM: confusing error message that dem-eu-lic-01 is not available
ECOG-2510	Filter Classes for Multiple Image Object Selection is applied to single image object selection too
ECOG-2506	Non-referenced layer alias is stored in solution
ECOG-2445	Starting Essentials with .tif image as command-line parameter doesn't invoke Action library callbacks
ECOG-2416	Widget: "Select File" > File Filter doesn't work
ECOG-2410	Action Library: drop down selection does not get updated after applying "Update parameter set" algorithm
ECOG-2401	Process Tree window: cannot select the "Main" tab
ECOG-2395	Crash when modifying customized algorithm settings
ECOG-2376	Crash when working with the Process Properties window
ECOG-2373	Architect: feature units cannot be changed
ECOG-2368	Layer arithmetics fails for arithmetics with negative numbers
ECOG-2363	Load - save solution: variable values reseted
ECOG-2361	Action variables get confused after saving and loading a solution
ECOG-2333	Algorithm vector simplification by distance sometimes simplifies too much
ECOG-2332	Multithreshold-autonaming switched off implicitly
ECOG-2309	Crash with boolean vector union
ECOG-2308	Vector orthogonalization: not all resulting vectors are rectilinear
ECOG-2269	Open the Edit Layer Mixing Dialog by using send command ID: view not updated
ECOG-2268	Developer crash when adding "assign class" to existing ruleset
ECOG-2241	Feature "all existing classes" doesn't respect actual scope
ECOG-2240	Multiresolution Segmentation Region Grow alg. > using a variables as weight doesnt work
ECOG-2239	Global classes in local class array are not properly displayed in manage arrays dialog
ECOG-2206	Set custom view settings algorithm: doesn't work when using thematic layer variables

ECOG-2193	Convert image objects to vector objects sometimes ignores small objects
ECOG-2169	Parameter set disappears when removing action
ECOG-2161	Radio Button: "Process path on release" not executed when user changes drop-down
ECOG-2160	Analysis toolbar: enable/disable condition doesn't work
ECOG-2142	Tooltip with pixel values not shown for very low zoom factors
ECOG-2131	Finish thematic edit mode alg. doesn't work: "Could not get VDI driver" error message
ECOG-2130	Project does not open when there are problems with the .gdb files
ECOG-2086	Radio button releases after using the buttons from the Analysis Toolbar
ECOG-2085	Variable disappears from parameter set after editing action library
ECOG-2040	Transfer image layer algorithm does not work with subset maps
ECOG-1925	Trying to use an encrypted rule set without the appropriate license blocks the software
ECOG-1919	Linux: eCognition License Server uninstaller - error message about missing pid file
ECOG-1699	Divide symbol displayed wrong in rule set
ECOG-1521	Vector OBIA: merge region does not allow to select a thematic layer
ECOG-540	License multiplication through multiple login in Remote Desktop session

2.3 Known Issues and Limitations

Since eCognition 9.0 it is not possible to create and use 3D raster stacks based on point cloud data, because the Z resolution of LAS files is not supported by the LAS driver anymore.

The Trusted Storage based license system does not support license borrowing, so that the eCognition License Borrowing functionality is removed since eCognition 9.0. Customers can use local license activation instead.

3 Acknowledgments

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3.3.1 gcore/Verson.rc

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3.3.2 frmts/gtiff/gt_wkt_srs.cpp

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