



eCOGNITION ADVANCED GEOSPATIAL DATA ANALYSIS



THE WAY WE UNDERSTAND OUR WORLD IS CHANGING



CADASTRAL CHANGE DETECTION



TREE DETECTION



VEGETATION MONITORING

eCognition® software is designed to improve, accelerate and automate the interpretation of images and geospatial data for environmental monitoring, resource development, infrastructure management and global security.

eCognition imports a variety of geospatial data, such as raster images, LiDAR point clouds, GIS vectors, radar and even hyperspectral data, fusing them together into a rich stack of geodata for analysis. Analysis logic is structured into series of steps to create a computer-based representation of an expert's geospatial interpretation process. 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.

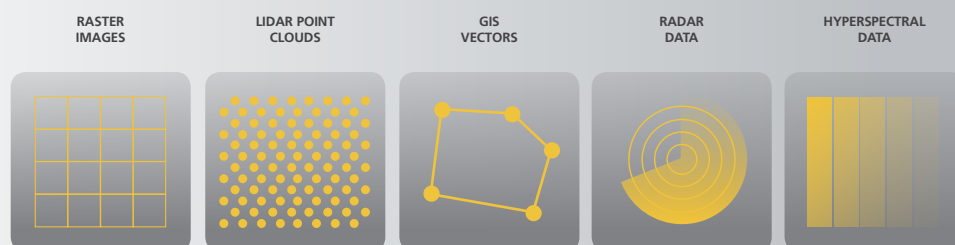
At the heart of this process is a sophisticated approach toward identifying the objects contained within geospatial data — and structuring them into an interrelated network.

This process is referred to as object-based image analysis or OBIA. This unique approach has proven invaluable to thousands of eCognition users across the globe conducting vegetation mapping, feature extraction, change detection and object recognition.

Advanced sensors gather geospatial data.



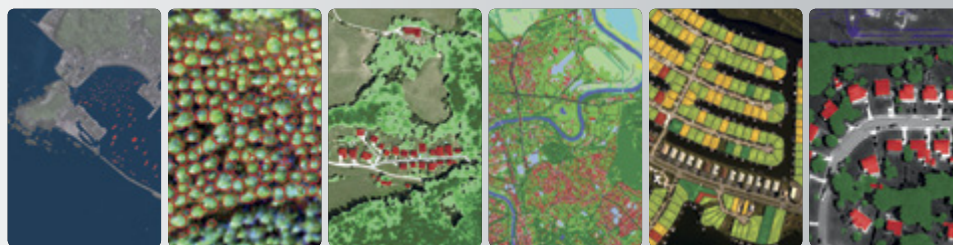
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eCOGNITION DEVELOPER

THE MOST POWERFUL DEVELOPMENT ENVIRONMENT
AVAILABLE FOR OBJECT BASED IMAGE ANALYSIS
APPLICATIONS.

eCognition Developer is used to develop rules which guide your geospatial analysis processes. An extensive collection of algorithms can be dynamically combined to facilitate the rapid development of geospatial analysis applications.

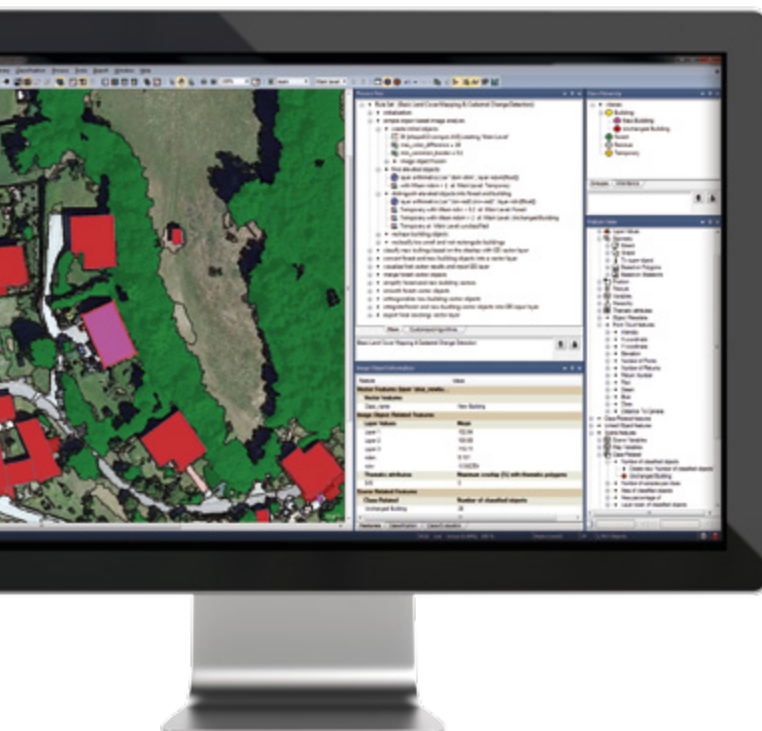
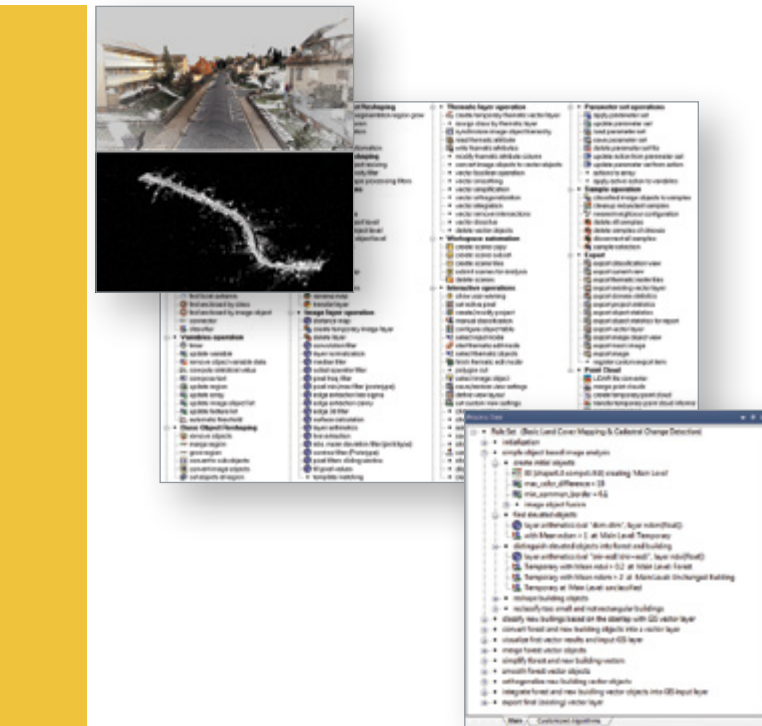
FOR EXAMPLE

- Segment a scene using a multiresolution, quad tree or chessboard segmentation.
- Classify using sample-based nearest neighbor, support vector machine, classification and regression tree, random trees, fuzzy logic membership function or specialized context-driven analysis
- Utilize layer operation algorithms to apply pixel based filters such as slope, aspect, edge extraction or user defined layer arithmetics.

The result is a completely custom application which reflects the user's desired analysis approach and requirements. The application development process utilizes simple drag and drop functionality to enable users without any computer programming skills to quickly develop standard applications, while simultaneously allowing advanced users to leverage powerful tools to tackle even the most advanced tasks. Included with eCognition Developer is a software development kit (SDK) which allows the core capabilities to be extended by adding algorithms, object features, data drivers and more.

“eCOGNITION DEVELOPER
PROVIDES A COMPREHENSIVE
DEVELOPMENT ENVIRONMENT
FOR OBJECT BASED IMAGE
ANALYSIS APPLICATIONS.”

Geospatial Solution Engineer





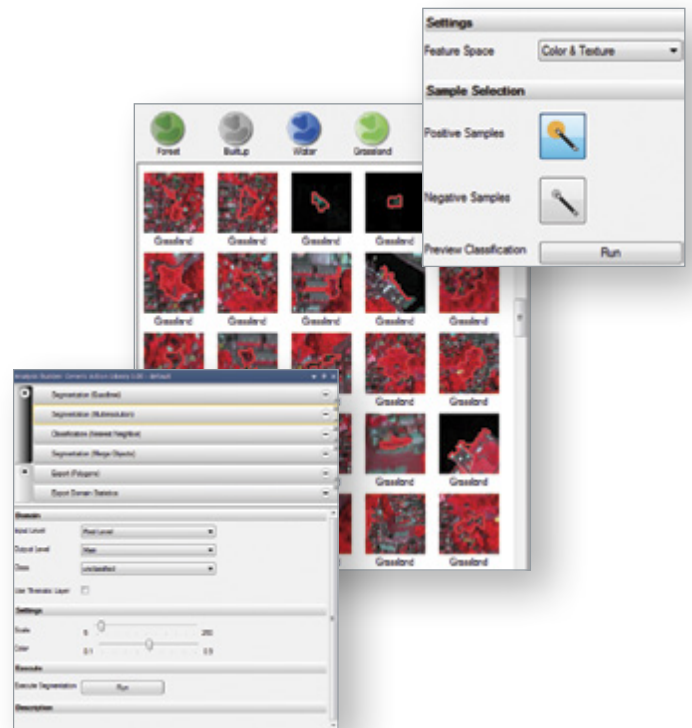
eCOGNITION ARCHITECT

CONFIGURE, CALIBRATE AND EXECUTE IMAGE ANALYSIS WORKFLOWS.

eCognition Architect enables workflow-guided solutions to be created from eCognition Developer logic using a toolbox of predefined actions. The resulting applications are easy-to-use and can be configured, calibrated and executed by domain experts, such as foresters or urban planners. This allows experienced geospatial analysts to create solutions for end-users who do not possess specific image interpretation or programming expertise.

As a result, geospatial analysis solutions can be implemented within sectors which traditionally have not relied on remote sensing data or to industries which currently under-utilize remote sensing capabilities. It also allows companies wishing to add commercial value to geospatial data to effectively establish editing and quality assessment production workflows.

After setting up an application in eCognition Architect, it can be stored and applied to a vast number of images by extending the eCognition installation with eCognition Server. This enables image analysis process to be fully automated while providing extensive scalability through its service-oriented architecture.



“eCOGNITION ARCHITECT
EASILY ALLOWS GUIDING
THROUGH ANALYSIS
WORKFLOWS.”

Geospatial Domain Expert

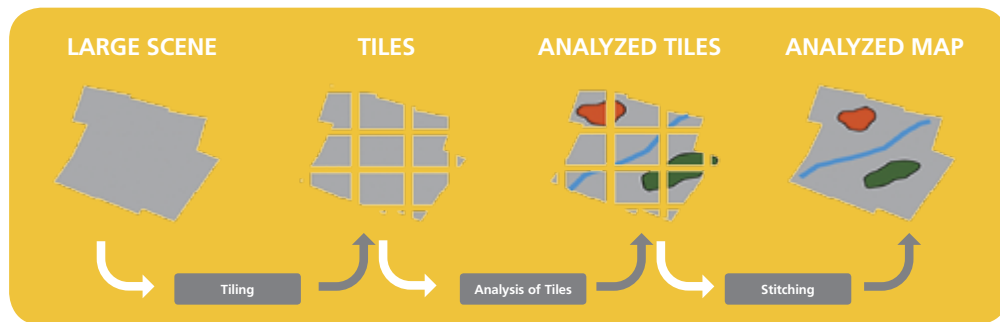




AUTOMATICALLY PROCESS THOUSANDS OF IMAGES AND PERFORM DETAILED ANALYSIS IN A SINGLE, FULLY AUTOMATED RUN.

eCognition Server software provides a processing environment for the batch execution of geospatial analysis jobs. It can automatically "tile and stitch" large scenes and process very large datasets. eCognition Server drastically reduces processing time by sharing the analysis workload across multiple processors and computers.

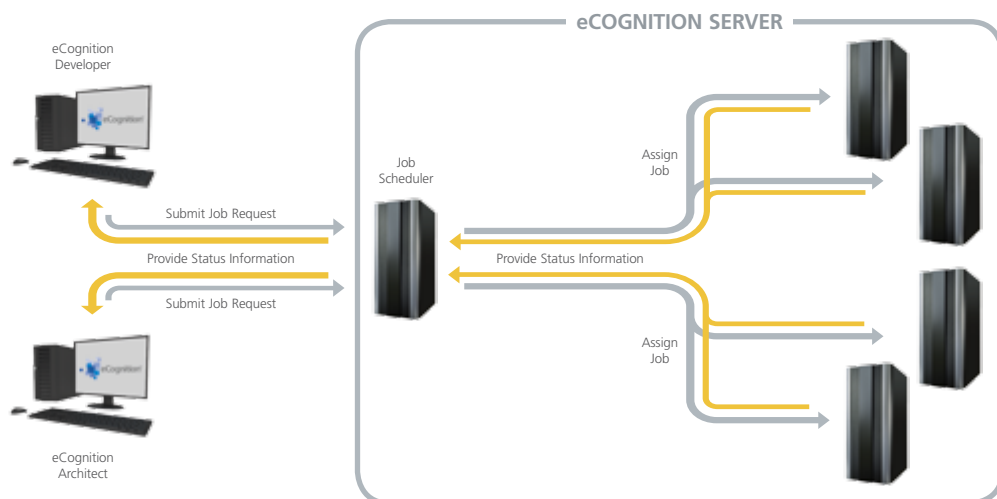
Included is the application programming interface (API) to allow eCognition Server to be embedded into existing workflows. Using the automation API, the system can be set up in a way that all steps from generation of workspaces to data submission and status monitoring can be triggered by third party software.



Tiling and Stitching allows automatically processing very large scenes or image mosaics

"eCOGNITION SERVER DRASTICALLY REDUCES PROCESSING TIME BY SHARING THE ANALYSIS WORKLOAD ACROSS MULTIPLE PROCESSORS."

Operations Manager



eCognition Server features a service oriented architecture facilitating batch processing of very large data sets

eCOGNITION FIELD APPLICATIONS



Advances in technology have made it possible to better understand and utilize forest resources in a sustainable manner. In particular, LiDAR scanning technologies and high-resolution satellite and airborne imagery have radically changed the science of forest management.

eCognition software provides foresters with the ability to conduct rapid, precise, large-scale forest analysis. Data sources are fused and analyzed to automate forestland classification, conduct tree species identification, quantify forest canopies and biomass, delineate individual tree crowns, and measure and monitor firescars or cutblocks.

TYPICAL APPLICATIONS

- Quantify canopies and biomass
- Identify species
- Delineate tree crowns
- Measure fire scars and cutblocks



eCognition software utilizes context to intelligently classify and quantify image and vector data for analysis of individual farms and vast farming regions – a significant advantage for those using imagery for large-scale agricultural monitoring.

Applications include verification of farming subsidy applications, assessment of insurance claims, and crisis response in cases such as disease, parasite outbreak, or flood conditions.

TYPICAL APPLICATIONS

- Evaluate land use and subsidy claims
- Regional resource management
- Assess crisis response
- Incorporate images into precision farming



The existence of more, and larger, cities creates an enormous challenge for urban planning, governance, and renewal. Airborne surveys, high resolution satellite imagery, and LiDAR scanning provide authorities improved opportunities to effectively plan and govern the modern urban environment.

eCognition software enables state and local governments, city planners, and transportation and environmental authorities to import, fuse, interpret, and analyze data from different sources to achieve a greater understanding of their urban environments. The results include improved accuracy in taxation, effective transportation and infrastructure design, and healthier urban environments more in balance with nature.

TYPICAL APPLICATIONS

- Plan infrastructure
- Assess property
- Improve taxation
- Build greener cities



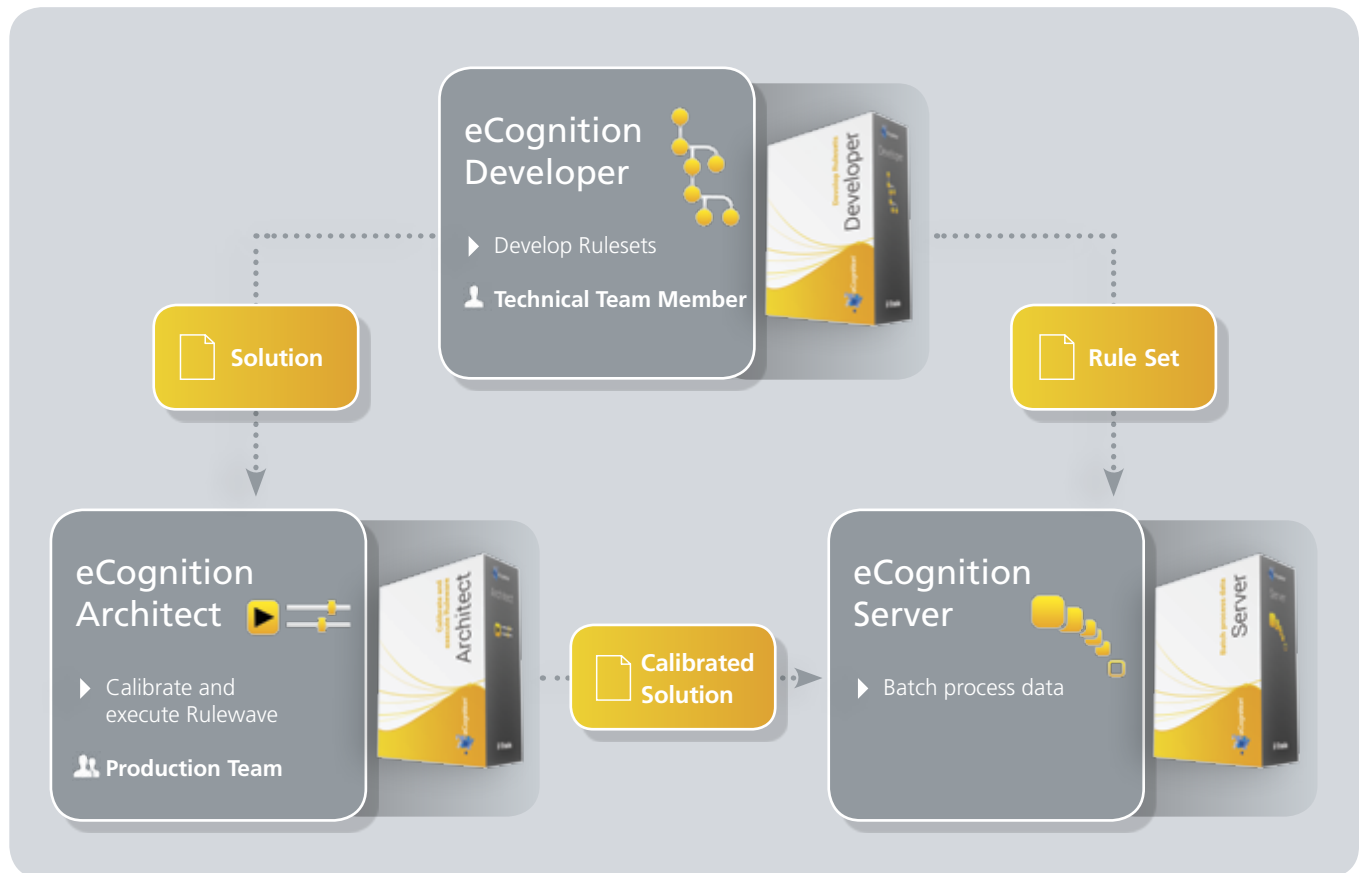
eCognition's advanced context-based architecture enables an improved understanding and mapping of important ecosystem parameters, identification of land and water-based forms and their changes, as well as urban growth patterns in coastal regions. The results enable better decisions about land and resource use, management practices, and coastal zone and watershed development.

TYPICAL APPLICATIONS

- Ecosystem study and monitoring
- Harbour and boarder managment
- Rapid disaster response

eCOGNITION SUITE

THE ECOGNITION SUITE OFFERS THREE DIFFERENT COMPONENTS WHICH CAN BE USED STAND-ALONE, IN COMBINATION OR TOGETHER WITH ECOGNITION SERVICES TO SOLVE EVEN THE MOST CHALLENGING GEOSPATIAL DATA ANALYSIS TASKS.



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