Learning eCognition

eCognition Course Catalog

Instructor-led courses
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Find more information about the product or other tutorials at
http://www.ecognition.com/
http://www.ecognition.com/community

Release Notice
Release date: November 2010

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Training Format

All instructor-led classes are held in English, if not noticed different. For all Training courses the relevant software is provided. For the standard instructor-led training participants receive the digital training manuals, data and exercises. For open training courses computer and the software are provided for each participant.

<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open training</td>
<td>The courses are held in classrooms all over the world. Check the events calendar at our website to learn more about scheduled classes and register.</td>
<td>Learn from an experienced trainer in carefully developed hands-on exercises. Meet other users and get networked by participating at an open training class.</td>
</tr>
<tr>
<td>In-Company training</td>
<td>In-company training is a cost effective option where up to ten staff have the same or similar training need.</td>
<td>Delivering in-company training programs at your premises will ensure minimum interruption to your business day, save you money on travel and hotel accommodation and provide the training to your staff in familiar surroundings which is conducive to retention of knowledge.</td>
</tr>
<tr>
<td>Customized training</td>
<td>We are able to design and deliver bespoke training programs for you and your team, tailored to meet your specific requirements and individuals learning needs.</td>
<td>An experienced trainer will work with you to fully understand your requirements and establish with you how to achieve your objectives thereby maximizing the training effect.</td>
</tr>
</tbody>
</table>

Registration information and contact

You can check open training dates and register at the "Registration" part in the respective training website or check the training calendar.

If you are interested in an in-company or a customized training, please use the contact form to send us a message: [http://www.ecognition.com/content/training-inquiries](http://www.ecognition.com/content/training-inquiries)
Overview over the training categories

We offer three different training categories:

**“Tools and Functionality” training courses:**
- For all users starting to learn the software; For update on new functionalities in new versions

**“Workflows and General Analysis Strategies” training courses:**
- For learning efficient Rule Set development teaching analysis focused workflows and strategies
- Product: Mainly for eCognition Developer and Server

**“Domain focused” training modules**
- For high level users focusing on either
  - Thematic domain like: Change Detection or LiDAR
  - Or getting in Production Mode
“Tools and Functionality” Training courses

The “Tools and Functionality” courses are available for all eCognition products, eCognition Developer, Server and Architect. To get updated on new software versions the “What’s new?” Trainings are available.

In the “Tools and Functionality” courses the main features and functions of the product are explained in hands-on and theoretical sessions. After the training the user has sound qualification to utilize the products and is able to set up standard workflows and procedures.

The courses are available as open-training course or in-company training as well as customized courses. Details about training formats see chapter “Training Format”

All courses are also listed at the eCognition website “Tools and Functionality” http://www.ecognition.com/learn/trainings/tools-and-functionality. Check the “Registration” at this page to see upcoming open training courses or contact eCognition_training@trimble.com.
eCognition Developer Training: Tools and Functionality

Overview
This three day course is the ideal start to learn all concepts of OBIA (Object Based Image Analysis) and the fundamental tools and functions to become a Rule Set developer.

The participant is guided through hands-on sessions alternated with exercises to recap the lessons learned. Goal: after this training the trainee has the capability to set up a image analysis workflows, the participant understands when to use which tool to come to the desired result on own data and topics.

Content
Tools and Functionality I explains all fundamental functionalities and methods from loading data to exporting the results. Different sensor types are used for the hands-on exercises.

- Introduction to OBIA (Object Based Image Analysis)
- Loading and viewing data
- Introduction to “Processes”
- Segmentation: creating image objects
- Image objects - the information carriers
- Basic classification; classify using context information: Feature ‘Relative border to class’
- Sample based classification with Nearest Neighbor classifier
- Merge objects; export results
- Batch-processing with eCognition Server

Tools and Functionality II explains tools and algorithms for more complex classification methods and refinement strategies. A land cover classification example is used analyzing a Quickbird subset.

- Using customized features for classification
- Classification using fuzzy membership functions – enhance transferability
- Semantic relationship and inheritance
- Refinement of classification using algorithms “find enclosed by” and “remove objects”
- Manual image object editing

Tools and Functionality III teaches how to use thematic GIS information, as well as the usage of multiple object levels. Tips and tricks about rule set re-usage and documentation and about reviewing results are also part of this module.

- Reusing and documenting Rule Sets
- Manual editing of thematic shape files
- Working with thematic shape files
- Creating multiple levels with ‘multiresolution segmentation’
- Classifying within several levels
- Review results with ‘Image Object Table’

Format/Price:
Three day instructor-led training. Available as open training or in-company training (up to 10 Participants); Price upon request (eCognition_Training@trimble.com)

Prerequisites and recommendations
Remote Sensing and GIS knowledge; After the course, it is recommended to attend the other instructor-led trainings of the category “Workflows and general Analysis Strategies” and “Domain Focused Training”.

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eCognition Developer: What’s new in version 8.0?

Overview
This one day course provides an update on the concepts, algorithms and data formats new to eCognition 8.0.

For developing Rule Sets, the concept of ‘maps’ and ‘regions’ is explained as well as the pixel based growing and shrinking algorithms to generalize object outlines.

You will also get an introduction on how to build applications with the eCognition Architect, as well as an overview of the new functionalities for manual classification and quality check to complete the entire image analysis workflow.

Content
- Object generalization
- Introduction to ‘maps’: independent object hierarchies in one project
  - True change detection
  - Down-sampling of scenes
- Working with regions of interest
- Native LiDAR support; import of point clouds, conversion
- Building interfaces in eCognition Architect

Format/Price:
One day instructor-led in-company training (up to 10 Participants); Price upon request (eCognition_Training@trimble.com)

Recommendation: or one of the modules from category “Workflows and general Analysis Strategies” and “Domain Focused Training”.

Prerequisites and recommendations
Prerequisites: Remote Sensing and GIS knowledge, “Tools and Functionality” course of older eCognition Developer versions;

Recommendation: Combine the training with the “eCognition Developer Tools and Functionality” Training. Additionally attend other instructor-led trainings of the category “Workflows and general Analysis Strategies” and “Domain Focused Training”.
eCognition Server: Tools and Functionality

Overview
This two-day training is ideal for those new to eCognition server or those wishing to exploit the full power of this eCognition Suite. All important tools and functions required to process large data volumes in an efficient batch mode are explained, including import and export handling, workspace automation, tiling and stitching of large image data.

Content
- Batch processing of multiple data
- Import and export handling
- Introduction to workspace automation
- Workspace automation: Tiling and stitching of large image data
- Workspace automation: Automatically creating subsets and copies
- Workspace automation: Transferring parameters between files
- Set up of workspace automation and processing on own sample data

Format/Price:
Two day instructor-led in-company training (up to 10 Participants); Price upon request (eCognition_Training@trimble.com)

Prerequisites and recommendations
Prerequisites: Remote Sensing and GIS knowledge, “eCognition Developer Tools and Functionality” course.
Recommendation: After the course attend other instructor-led trainings of the category “Workflows and general Analysis Strategies” and “Domain Focused Training”.

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eCognition Architect: Tools and Functionality

Overview
This two day course explains how eCognition Architect enables complex image analysis routines to be wrapped into an easy user interface designed to guide semi-automated analysis workflows. Receive an introduction to creating applications using widgets, parameter sets and variables.

Content
- Introduction to creating new applications
- The Action ‘Create Image Objects’
  - Creating the parameter set and variable
  - Creating the first action group; Creating the action definition
  - Adding a widget group to Action definition; Adding widgets to the action
  - Modifying and extending the Rule Set for ‘Create Image Objects’
- The action ‘Classify Vegetation’
- The action ‘Classify Water’
- The action ‘Manual Classification’
- The action ‘Clutter Removal’
- The action ‘Merge Objects’
- The action ‘Export Vector Layer’

Format/Price:
Two day instructor-led open training or in-company training; Price upon request (eCognition_Training@trimble.com)

Prerequisites and recommendations
Prerequisites: Remote Sensing and GIS knowledge, , “eCognition Developer Tools and Functionality” course;
Recommendation: After the course attend other instructor-led trainings of the category “Workflows and general Analysis Strategies” and “Domain Focused Training”.

“Workflows and General Analysis Strategies” Training courses

Covered the basics and now need to take your skills to the next level? We can help you reach the highest levels of efficiency in operational image analysis. The courses and materials found here will help you to develop robust, sophisticated rule sets.

Prerequisite is to attend the “eCognition Developer Tools and Functionalities” and also have worked with the software for some time.

Ideally after a couple of weeks after the “eCognition Developer Tools and Functionalities” course the “Workflows and General Analysis” course follows.

This is to ensure that the fundamentals about how to use eCognition Developer are settled and general image analysis functionalities are understood, so that the participants can benefit most from the “Workflows and General Analysis” course.

You can either:

- book the three days standard course with fixed content, see details Standard Training course: “eCognition Developer Workflows and General Analysis Strategies. The course is available as open-training course or in-company training.

- or combine modules individually to a course of two or three days.

All courses and modules are also listed at the eCognition website: “Workflows and General Analysis Strategies” http://www.ecognition.com/learn/trainings/workflows-and-general-analysis-strategies. Check the “Registration” at this page to see upcoming open training courses or contact eCognition_training@trimble.com for in-company training.

Overview
This three day course is ideal as a follow up to the “eCognition Developer: Tools and Functionalities” course.

It begins with a general introduction to efficient project management, in the following modules advanced strategies for segmentation and classification are explained. During this course you may also work directly on your own data.

Content
- **Introduction to efficient project management:**
  Learn from the experiences of eCognition consulting team in successfully setting up and implementing large scale projects.

- **Dynamic classification: Seed-grow-approach**
  This module explains how to create an own segmentation routine using no predefined segmentation algorithm, but a series of segmentation, classification, re-segmentation and growing of objects to delineate the final objects of interest.

- **Improve Rule Set transferability I: Using measurement techniques and variables.**
  In this module variables instead of fix thresholds for classification are used. The values for these variables are automatically calculated by an algorithm. The Rule Set is then applied to several subsets demonstrating the advanced transferability using this technique.

- **Intelligent object reshaping: Image object fusion and condition based region growing**
  This module focuses on methods for growing and reshaping existing objects.

- **Independent object hierarchies, the ‘maps’ concept; example: Change Detection**
  Maps are independent “sub-projects” which provide a high flexibility in object creation and synchronization. In this module the concept of ‘maps’ is explained using an example of Change Detection.

- **Performance improvement: Working with ‘regions’ and ‘maps’**
  This module gives an introduction on how to combine maps and regions to classify areas of interest in a fast and efficient way.

- **Working on own data**

Format/Price:
Three days instructor-led open training or in-company training; Price upon request (eCognition_Training@trimble.com)

Prerequisites and recommendations
Prerequisites: Remote Sensing and GIS knowledge, “eCognition Developer Tools and Functionalities” course; work experience with eCognition Developer.

Recommendation: After the course combine from one of the other modules of this section a second course or talk with us about customized training or consulting to support you in your project work. Additionally also see our “Domain Focused Training” courses.
Variable course/individual modules: “Workflows and Analysis Strategies”

Overview
If the standard “eCognition Developer Workflows and General Analysis Strategies” does not fit your needs, you can also combine modules of different length to two or three days course.
It is an ideal course as a follow up to the “eCognition Developer Tools and Functionalities” with more flexibility than the standard course. The content is designed to lift you to the next level of more complex and dynamic object based image analysis and explains strategies to enhance your analysis. Our eCognition training team is happy to assist you with more information to select the modules for your course.

Possible Modules
Details see in the following chapters

<table>
<thead>
<tr>
<th>Days</th>
<th>Module title</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,75</td>
<td>Seed-grow-approach, iterative, dynamic series of segmentation and classification</td>
</tr>
<tr>
<td>0,25</td>
<td>Improve Rule Set transferability I: Using measurement techniques and variables</td>
</tr>
<tr>
<td>0,25</td>
<td>Intelligent object reshaping: condition based region growing and pixel-based resizing using surface tension</td>
</tr>
<tr>
<td>0,5</td>
<td>Rule Set Automation: Looping Process sequences Example: “Close Gaps”</td>
</tr>
<tr>
<td>0,75</td>
<td>Independent object hierarchies, the ‘maps’ concept; example: Change Detection</td>
</tr>
<tr>
<td>0,75</td>
<td>Performance improvement: Working with ‘regions’ and ‘maps’</td>
</tr>
<tr>
<td>0,25</td>
<td>Efficient project management: Consulting methodology</td>
</tr>
<tr>
<td>0,5</td>
<td>Introduction to working with elevation data</td>
</tr>
</tbody>
</table>

Format/Price:
Instructor-led in-company training (up to 10 Participants); Price upon request (eCognition_Training@trimble.com)

Prerequisites and recommendations
Prerequisites: Remote Sensing and GIS knowledge, “eCognition Developer Tools and Functionalities” course; work experience with eCognition Developer.
Recommendation: After the course combine from one of the other modules of this section a second course or talk with us about customized training or consulting to support you in your project work. Additionally also see our “Domain Focused Training” courses.
Overview over possible Modules:

**Module: Analysis strategy: ‘Seed-grow approach’: iterative, dynamic series of segmentation and classification**

This module explains how to create an own segmentation routine using no predefined segmentation algorithm, but a series of segmentation, classification, re-segmentation and growing of objects to delineate the final objects of interest. The method is explained using an example of water classification, which gives insight into advanced techniques to create dynamic Rule Sets.

- Classify seed-objects for the class ‘Water’
- Create a buffer of “Candidate” objects from “Seed” objects
- Automatically grow initial objects into the buffer using spectral similarities

**Module: Improve Rule Set transferability I: Using measurement techniques and variables**

In this module variables instead of fix thresholds for classification are used. The values for these variables are automatically calculated by an algorithm. The Rule Set is then applied to several subsets demonstrating the advanced transferability using this technique.

- Introduction to ‘variables’
- The algorithm ‘compute statistical value’
- Replace fix values with variable
- Test the Rule Set using batch-processing

**Module: Intelligent object reshaping**

This module focuses on methods for growing and reshaping existing objects.
Module: Rule Set Automation: Looping process sequences; Example: "Close Gaps"

This module concentrates on how looping a process sequence helps to automate classification. Looping of process sequences means an automated repetition until a certain criteria is met. In this module not connected ends in a road network shall be closed. The looping is implemented by jumping automatically from one gap to the next until all are closed and also the growing from a start to an end point is wrapped in a loop. Parts of the Rule set are:

- Generalize roads and identify isolated road objects using distance features and neighborhood analysis
- Create a condition based automated repetition of a process sequence
- Identify the START and END point of the growing process

Module: Independent object hierarchies, the 'maps' concept; Example: Change Detection

Maps are independent “sub-projects” which provide a high flexibility in object creation and synchronization. In this module the concept of ‘maps’ is explained using an example of Change Detection.

- Creating two independent maps
- Classifying vegetation on both maps individually
- Synchronizing content of maps
- Applying the actual change detection

Module: Performance improvement by focusing on area of interest: Working with 'regions' and 'maps'

This module gives an introduction on how to combine maps and regions to classify areas of interest in a fast and efficient way. The analysis on this example is a continuing interplay between identifying regions, creating maps, its classification and the synchronization of results.

- Introduction to the analysis workflow
- Classifying regions of interest via a map with lower resolution
- Detail analysis of water bodies using a detail map with full resolution
- The complete classification
Module: Efficient project management: Consulting methodology

Learn from the experiences of eCognition consulting team in successfully setting up and implementing large scale projects.

- Scoping
- Problem assessment
- Image and data staging
- Intelligence strategy
- In-depth development
- Deployment
- Project end or production

Introduction to working with elevation data

This module explains an advanced way of how to use LiDAR data which is converted in raster using eCognition software to extract buildings outlines. Buildings are classified in a robust and transferable way.

- Get more information out of your DSM data: the image filters
- Prevent border effects when creating temporary image layers
- Create image objects using the slope layer and ‘contrast split segmentation’
- Classify steep areas using slope information
- Classify ground by measuring the lowest elevation
- Classify buildings using the difference in elevation
- Clean up based on spectral layers, clean up highly surrounded objects
“Production and Thematic Domain Focused” Training courses

In this category you can find all courses focused on data analysis in production and specific subject domains. Often it makes sense also to book rather a customized training than one of the standard modules to exactly fit your needs and bring your image analysis to production level. Please talk with us about a customized course designed on your data and topics.

Prerequisite to attend one of the courses about “Production and Thematic Domain Focused Training” is to attend the “eCognition Developer Tools and Functionalities” as well as one course from the section “Workflows and General Analysis Strategies” and also have worked with the software for some time.

eCognition Developer and Server: Production Focused Training

Overview
When your project is at a point where you need to create results in a production mode, the modules of this training will help you to get your data and processing up and running and under control.
Prerequisite for these modules is to have one or more eCognition Server software license.
Our eCognition Training team is happy to assist you with choosing the modules or to talk about customized training. Please contact us at eCognition_Training@trimble.com

Possible Modules

<table>
<thead>
<tr>
<th>Days</th>
<th>Module title</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25</td>
<td>Introduction to Workspace automation</td>
</tr>
<tr>
<td>0.5</td>
<td>Carry on important information: Workspace Automation using statistics</td>
</tr>
<tr>
<td>0.25</td>
<td>Performance Improvement Example: Combine Maps and Regions</td>
</tr>
<tr>
<td>0.25</td>
<td>Tips and Tricks for efficient Rule Sets calibration</td>
</tr>
<tr>
<td>0.25</td>
<td>Tips and Tricks to make Rule Sets reusable</td>
</tr>
<tr>
<td>1</td>
<td>Create a QA interface</td>
</tr>
<tr>
<td>0.25</td>
<td>Tips and Tricks to monitor mistakes/accuracy</td>
</tr>
</tbody>
</table>

Format/Price:
Instructor-led in-company training (up to 10 Participants); Price upon request (eCognition_Training@trimble.com)

Prerequisites and recommendations
Prerequisites: Remote Sensing and GIS knowledge; “eCognition Developer Tools and Functionalities” course; “Workflows and General Analysis Strategy” courses; work experience with eCognition Developer.
Recommendation: After the course combine from one of the other modules of this section a second course or talk with us about customized training or consulting to support you in your project work. Additionally also see our “Domain Focused Training” courses.
eCognition Developer Thematic Domain
Focused Training

Overview
If you want to learn from our experts on strategies proven to be successful on specific subjects like LiDAR, coastline detection etc. you will find here modules which describe the general approach for the subject you are interested in. Ideally these Modules are then combined with a customized course, where modules and lessons are adapted to your needs and/or working with your own data.

Our eCognition Training team is happy to assist you with choosing the modules or to talk about customized training to help you to make your projects successful. Please contact us at eCognition_Training@trimble.com

Possible Modules

<table>
<thead>
<tr>
<th>Days</th>
<th>Module title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coast line detection</td>
</tr>
<tr>
<td>0.25</td>
<td>Importing and using LiDAR *.las files in 2D</td>
</tr>
<tr>
<td>0.5</td>
<td>Introduction to working with elevation data</td>
</tr>
<tr>
<td>1</td>
<td>Building extraction with DSM data</td>
</tr>
<tr>
<td>1</td>
<td>Landcover change detection</td>
</tr>
<tr>
<td>1</td>
<td>Shrub classification and categorization</td>
</tr>
</tbody>
</table>

Format/Price:
Instructor-led in-company training (up to 10 Participants); Price upon request (eCognition_Training@trimble.com)

Prerequisites and recommendations
Prerequisites: Remote Sensing and GIS knowledge; “eCognition Developer Tools and Functionalities” course; “Workflows and General Analysis Strategy” courses; work experience with eCognition Developer.

Recommendation: After the course combine from one of the other modules of this section a second course or talk with us about customized training or consulting to support you in your project work. Additionally also see our “Production Focused Training” courses.