Combining ArcGIS and eCognition for More Effective Stand Delineation

Jenni Ljunglöf
Adrian Madejczyk
Goals

- To create a new and more correct stand delineation for large areas of forest.
- To calculate values for forest parameters such as tree height, basal area and timber volume and their mean values with high accuracy.

Criteria

- Large project areas – high level of automation
Who Are We?

- COWI Forest and Mapping
- Kongsberg, Norway.
- Develope and produce products for forestry
- Mainly in Scandinavia
  - but also for example South America and Asia
Problem

Picture

• Check geometry and prepare table structure
• Adjust stand borders automatically
  • Pattern recognition
  • Neighbor analysis
• Creation of micro stands and grid
• Tree height means and percentiles
• Adjust new stands to old property borders
• (Gridlevel calculations)
• Aggregation of calculated values from grid to stand level
• Lonely tree analysis
• Automate!
Softwares

"eCognition Developer is a powerful development environment for object-based image analysis. It is used in earth sciences to develop rule sets /.../ for the automatic analysis of remote sensing data."

"Anyone can put geographic knowledge to work in government, business, science, education, and media using ArcGIS."
Software Comparison

**eCognition**
- Raster Creation (Limited)
- Raster Analysis
- Vector Creation (Limited)
- Vector Analysis (Limited)
- Pattern recognition
- Neighborhood Analysis
- Rule set

**AarcGIS**
- Lidar
- Raster Creation
- Raster Analysis
- Vector Creation
- Vector Analysis
- Pattern recognition (Limited)
- Neighborhood Analysis (Limited)
- Single Tools
- Model builder
- Scripting (python)
- Topology tools
- Tables
- Multipart capability

Single parts
Segmentation Preparation - ArcGIS

Raster preparation

Vector preparation
   Topology checks

Table preparation
Segmentation and Classification - eCognition
Final Processing - ArcGIS

Topology

Table Calculations

Forest Parameter Calculations from LiDAR Data...
Thank you!

Contakt:

Jenni Ljunglöf
Projekt Coordinator and GIS Expert
jelf@cowi.no
0047-466 388 21

Adrian Madejczyk
GIS Expert
admk@cowi.no
0047-