LEMAN - A Production Framework for Publishing Forestry Maps

Andrzej Talarczyk, Izabela Nalborczyk

Biuro Urządzenia Lasu i Geodezji Leśnej
Forests in Poland

Poland: 312,679 km²

Forest area: 9.17 mil. ha, forest cover: 29.4%
Bureau for Forest Management and Geodesy

Forest management planning

National Forest Inventory

Forest Data Bank

Other tasks for the forest sector and environmental management
Forestry was one of the first sectors of the economy in Poland to use GIS on a massive scale.
Forest management planning goals

- General description
- Forest management plan
- Strategic environmental impact assessment
- Facultative analyses: road network, water system, economic
- Forest stand inventory and maps
- Management plans for a 10-year period (felligs, silviculture, forest protection, fire protection)
- Nature protection plan
GIS-related products in Polish forest management planning

- Inventory and planning
- Operations

Data (geographic and descriptive)
- Felling plan, nature conservation program, management guidelines
- Maps

State Forests Information System
Motivation (business needs)

- Automation of spatial data editing and cartographic production
- Parallel workflow of data gathering and GIS product preparation
- Product standardization
- Quality assurance
- Increased ergonomics
- External data quality checks
Typical workflow

- **Data conversion**

- **Data update**

- **Area size reconciliation**

- **Preparation of felling plan**

- **Preparation of cartographic products**
Spatial data editing

Tagging spatial objects with values from database
Spatial data editing

Automatic creation of child layers

Keeping topological consistency between layers
Analytical support – area reconciliation

Interface leads the user
Analytical support – felling plans

Fellings plan
Analytical support – felling plans

Fellings plan
Cartography – symbols

- Cartographic representations
- Easy swapping of symbology variants
- Advanced symbolization techniques
Cartography – symbols

Example: communication
Why cartographic representations?

- Advanced symbol placement and sizing
- Easy automated assignment of symbology to the whole map
Cartography – custom symbols

„Kasownik”

Coordinate markers
Cartography – custom labels

Custom labels for forest subcompartments

As easy to change as a mouse click
Cartography – map layouts

Specific editing and layout needs – e.g. forest fire protection map
Cartography – map layouts

Map frame descriptions – automatic generation from database
Cartography – map layouts

Map templates
Workflow support – data exchange
Historical development

• First solutions in ArcView 3.x (Avenue)
• Big step – migration from AV3 to ArcMap 9.x
• Complete rewrite and migration to level Standard – ArcMap 10.x
• Esri Enterprise License Agreement
Behind the scenes

- ArcMap Add-in
- ArcObjects .NET API
- Tools are mainly Python scripts
- Integration with external tools:
  - GDAL
  - ET Geotools
  - custom .NET libraries
Future prospects

- Migration to ArcMap 10.5 under way
- LEMAN Next Generation – ArcGIS Pro
Dr. Andrzej Talarczyk, Eng. Izabela Nalborczyk

Biuro Urządzenia Lasu i Geodezji Leśnej

ul. Leśników 21
05-090 Sękocin Stary

sekretariat@zarzad.buligl.pl
www.buligl.pl