GIS groups of tasks

- Geodata collecting, updating
- Geodata storing and distributing
- Geodata analysis
- Geodata visualization: Desktop, Internet, Printing
- Geodata describing: metadata management
- Geodata converting: coordinate, formats

OSGIS Platform

Collecting, updating
GRASS, JUMP, QGIS

Analysis
GRASS, JUMP, PostGIS

Internet visualization
UMN MapServer, Deegree

Converting
GDAL, OGR, PROJ.4

Storing and distributing
PostGIS, Deegree, UMN Map Server

Desktop visualization
JUMP, QGIS, Thuban, uDIG, gvSIG

Printing (Layouting)
gvSIG, GRASS

Metadata
GatMDEdit, GeoNetwork , GeoTools

OSGIS Platform - homogeneity

- Standards
- OGC: GML, WMS, WFS, WCS, ...
- ISO: 19115, 19119, ...
- W3C: SOAP, HTTP, PNG, ...

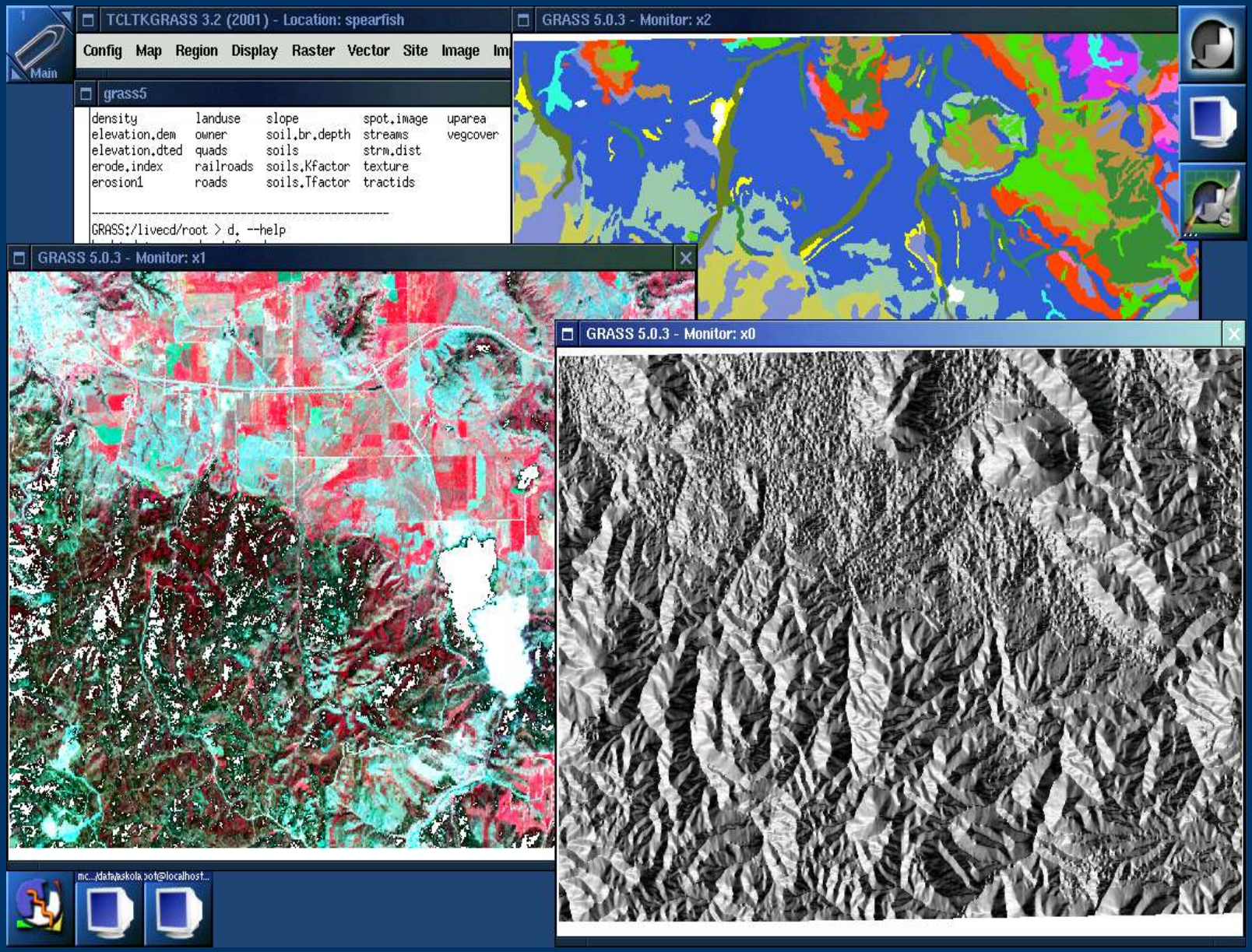
OSGIS Platform – other supporting tools

- GNU/Linux
- Apache
- Tomcat
- Axis
- Mozilla
- Inkscape
- Open Office
- ...

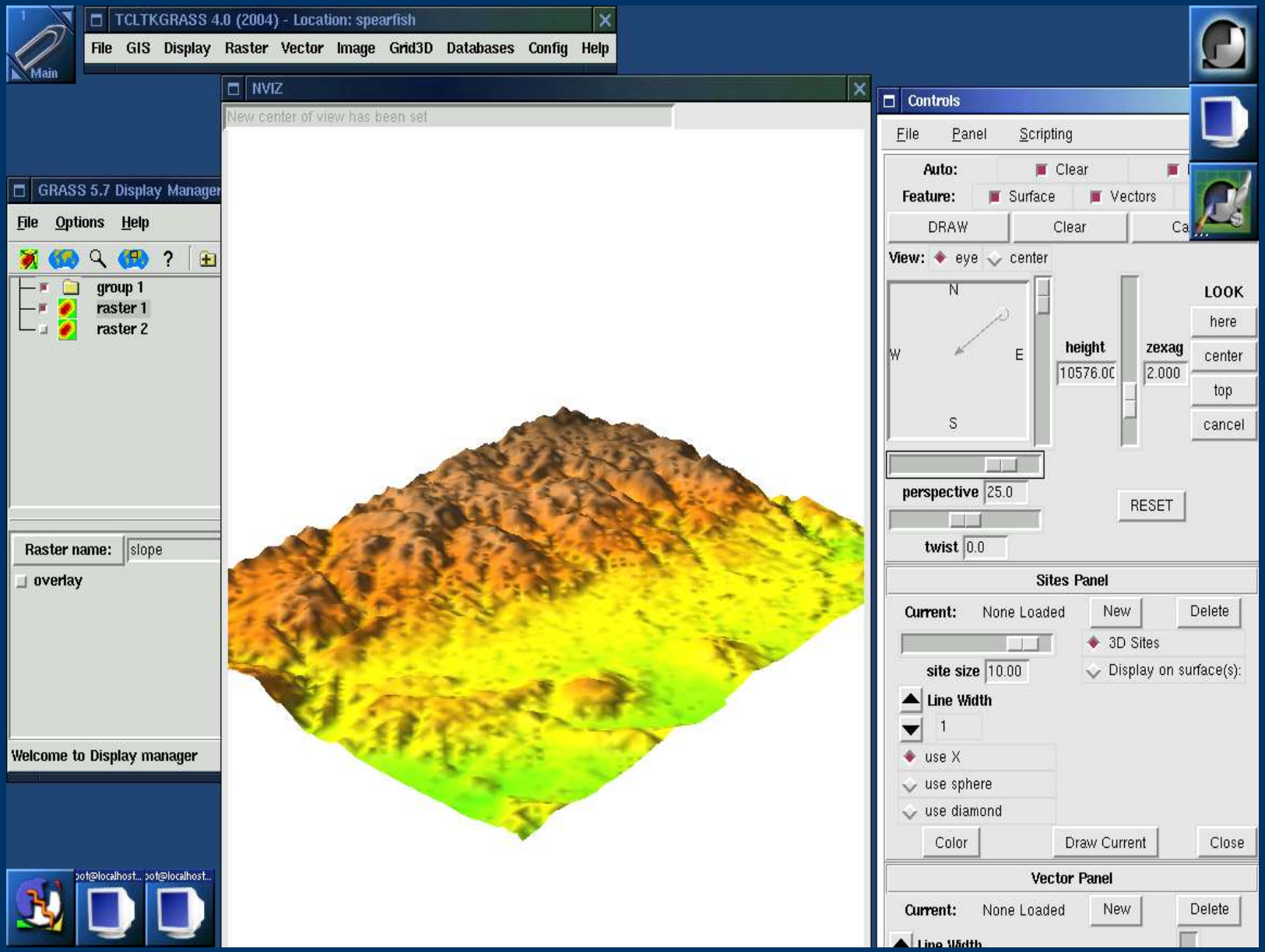
GRASS GIS

- Software for building GIS
- Spatial data management
- Image processsing (remote sensing images)
- GIS analysis
- Spatial modeling and visualisation of different data sources
- 2.5D, 3D, 4D modeling
- Wide-variety vector and raster data formats

GRASS 5.4


TCLTKGRASS 3.2 (2001) - Location: spearfish
Config Map Region Display Raster Vector Site Image
grass5
density landuse slope spot.image uparea
elevation.dem owner soil.br.depth streams vegcover
elevation.dted quads soils strm.dist
erode.index railroads soils.Kfactor texture
erosion1 roads soils.Tfactor tractids
GRASS:/livecd/root > d. --help
GRASS 5.0.3 - Monitor: x2
GRASS 5.0.3 - Monitor: x1
GRASS 5.0.3 - Monitor: x0

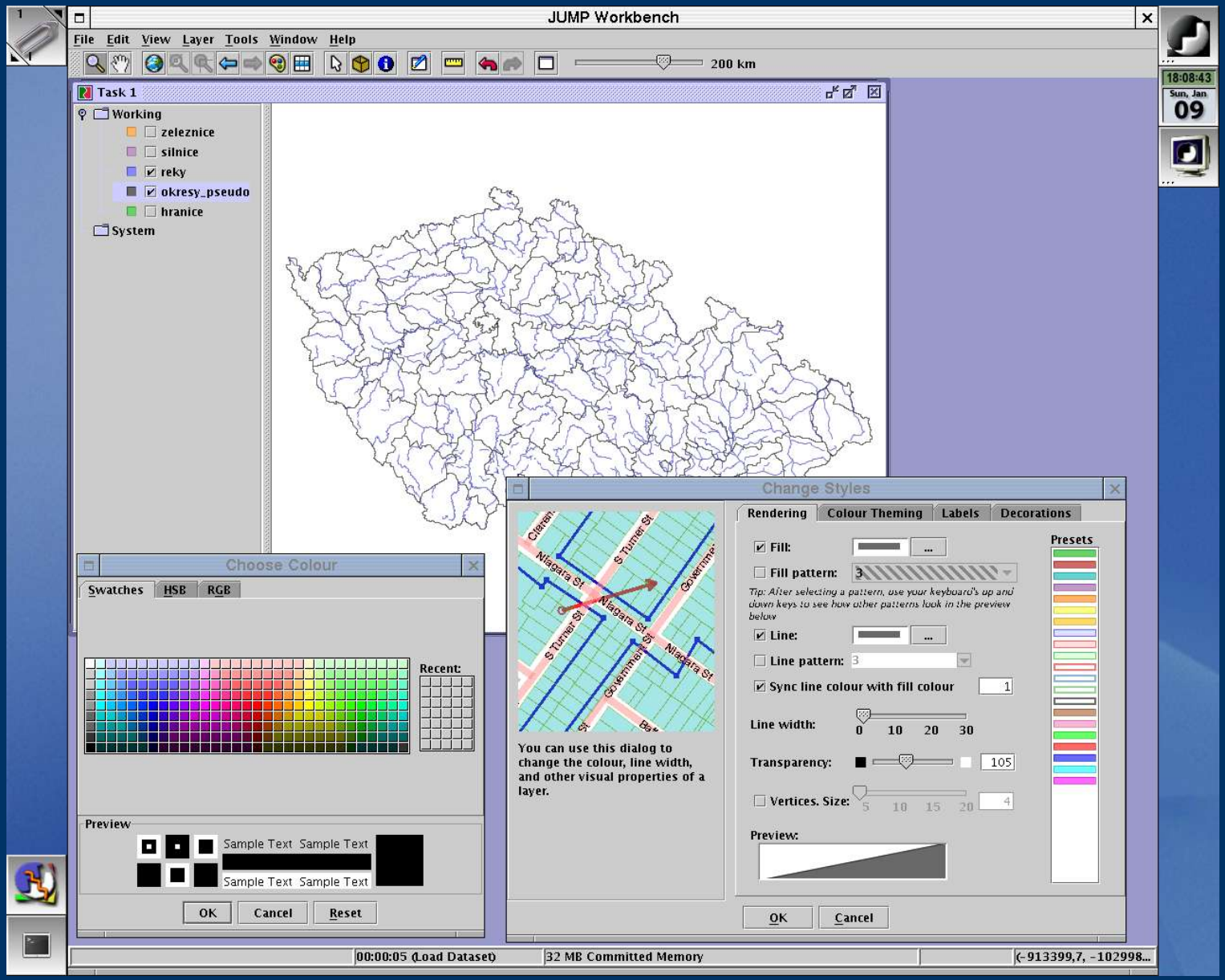
GRASS 5.7


TCLTKGRASS 4.0 (2004) - Location: spearfish
File GIS Display Raster Vector Image Grid3D Databases Config Help
Main
NVIZ
New center of view has been set
GRASS 5.7 Display Manager
File Options Help
group 1
raster 1
raster 2
Raster name: slope
overlay
Welcome to Display manager
Controls
File Panel Scripting
Auto: Clear
Feature: Surface Vectors
DRAW Clear
View: eye center
N
W E
S
height 10576.00
zexag 2.000
LOOK
here
center
top
cancel
perspective 25.0
RESET
twist 0.0
Sites Panel
Current: None Loaded
New
Delete
3D Sites
site size 10.00
Display on surface(s):
Line Width
1
use X
use sphere
use diamond
Color
Draw Current
Close
Vector Panel
Current: None Loaded
New
Delete

JUMP

- Application that provide an extensible API and graphic user interface (GUI)
- Viewing, editing, and processing spatial data
- Functionality comparable to ArcView 3.0 without extensions
- High degree of modularily and extensibility
- Support for major industry standards such as GML and the OpenGIS Consortium's Spatial Object Model
- Open Source code written exclusively in Java™

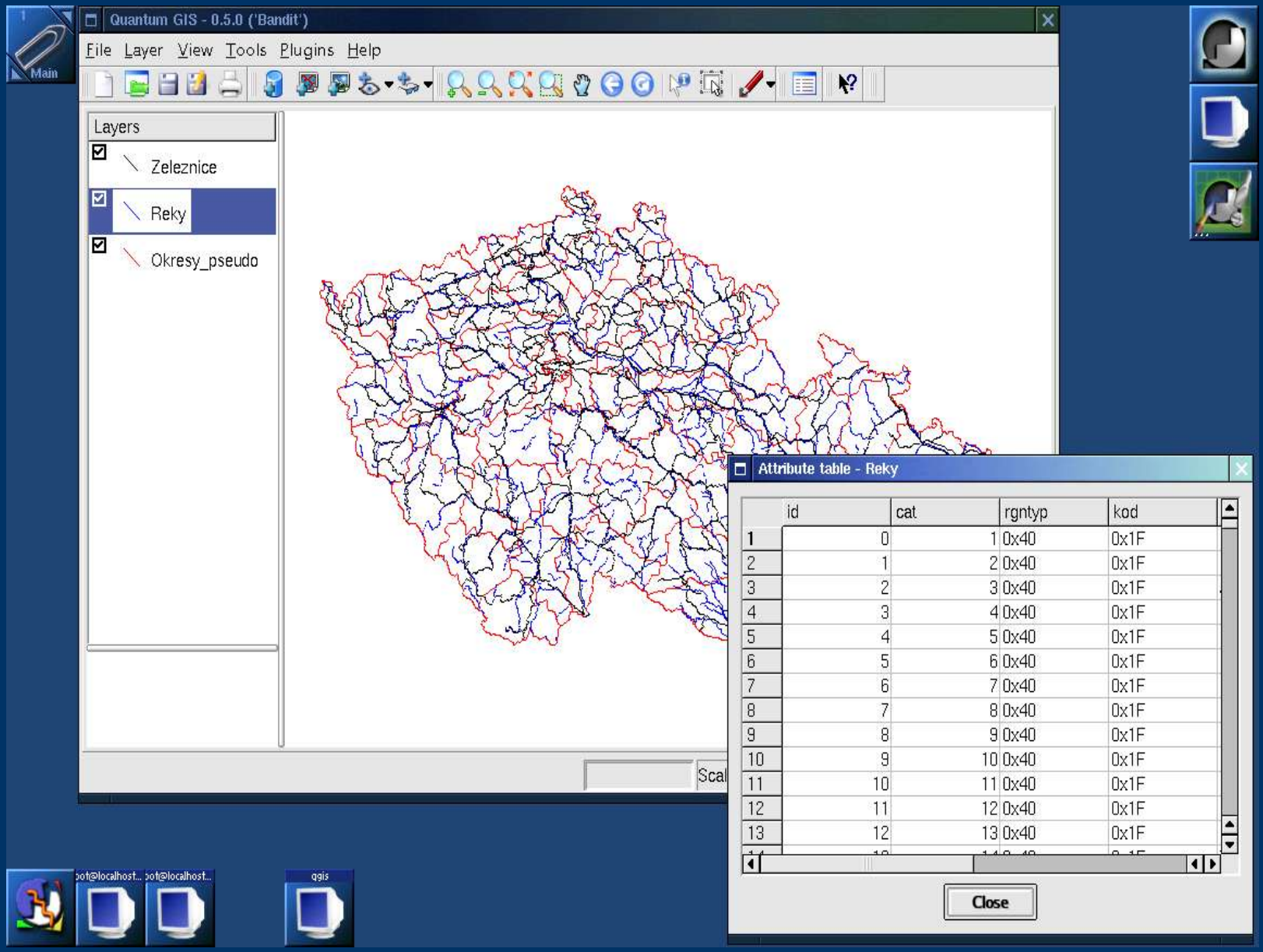
JUMP


JUMP Workbench
File Edit View Layer Tools Window Help
200 km
Task 1
Working
zeleznice
silnice
reky
okresy_pseudo
hranice
System
Choose Colour
Swatches HSB RGB
Recent:
Preview
Sample Text Sample Text
Sample Text Sample Text
OK Cancel Reset
Change Styles
Rendering Colour Theming Labels Decorations
Presets
Fill:
Fill pattern:
Tip: After selecting a pattern, use your keyboard's up and down keys to see how other patterns look in the preview below
Line:
Line pattern:
Sync line colour with fill colour
Line width:
0 10 20 30
Transparency:
105
Vertices. Size:
5 10 15 20
Preview:
You can use this dialog to change the colour, line width, and other visual properties of a layer.
OK Cancel
00:00:05 (Load Dataset)
32 MB Committed Memory
(-913399,7, -102998...

Quantum GIS

- Supports a number of raster and vector data formats
- Support for ESRI shapefiles and other vector formats supported by the OGR library, including MapInfo files
- Export to Mapserver map file for example for UMN Map Server
- Support for spatially enabled PostgreSQL tables using PostGIS
- Tool for simple analysis

Quantum GIS

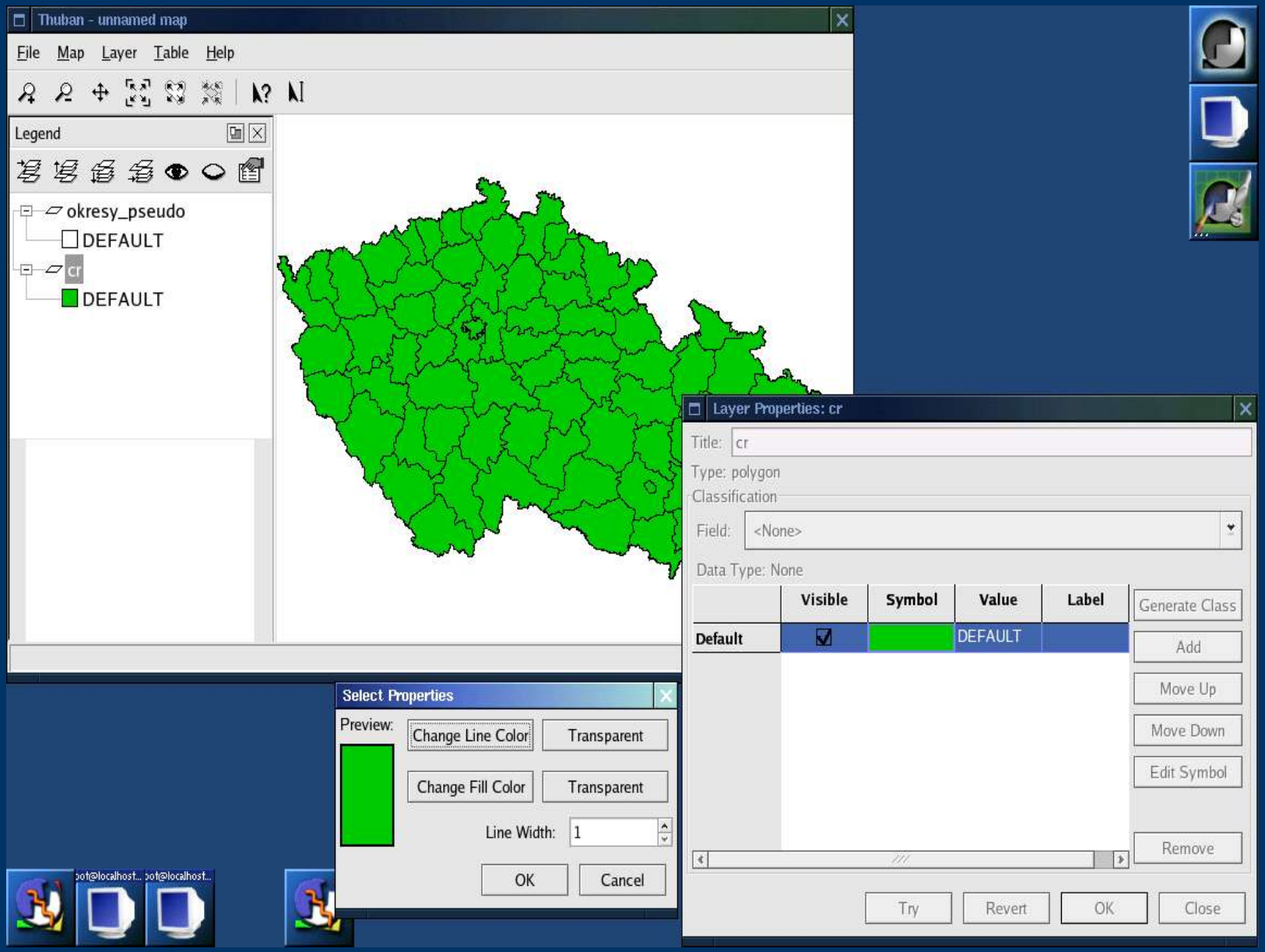

Quantum GIS - 0.5.0 ('Bandit')
File Layer View Tools Plugins Help
Layers
Zeleznice
Reky
Okresy_pseudo
Attribute table - Reky
id cat rgntyp kod
1 0 1 0x40 0x1F
2 1 2 0x40 0x1F
3 2 3 0x40 0x1F
4 3 4 0x40 0x1F
5 4 5 0x40 0x1F
6 5 6 0x40 0x1F
7 6 7 0x40 0x1F
8 7 8 0x40 0x1F
9 8 9 0x40 0x1F
10 9 10 0x40 0x1F
11 10 11 0x40 0x1F
12 11 12 0x40 0x1F
13 12 13 0x40 0x1F
Close
Main
qgis

Thuban

- Interactive geographic data viewer
- Written in Python and C++ and uses the wxWindows library
- Allows the user to create a session that displays geographic data and then explore that data through navigation and manipulation of how it is drawn
- Extensible and multi-platform
- Multi-Language Support:

  English, French, German, Italian, Russian and Spanish

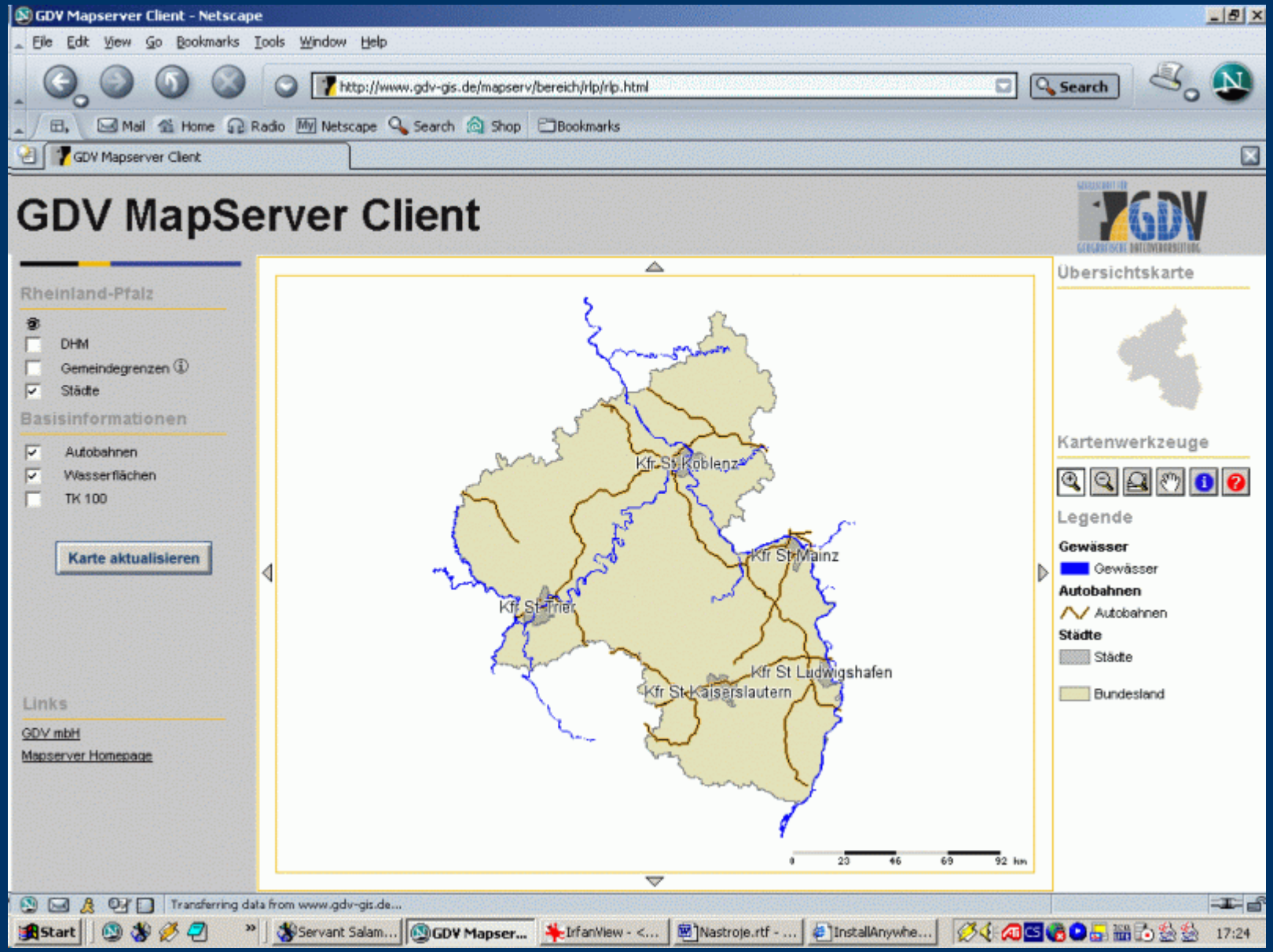
Thuban


Thuban - unnamed map
File
Map
Layer
Table
Help
Legend
okresy_pseudo
DEFAULT
cr
DEFAULT
Layer Properties: cr
Title:
cr
Type: polygon
Classification
Field:
<None>
Data Type: None
Visible
Symbol
Value
Label
Default
DEFAULT
Generate Class
Add
Move Up
Move Down
Edit Symbol
Remove
Try
Revert
OK
Close
Select Properties
Preview:
Change Line Color
Transparent
Change Fill Color
Transparent
Line Width:
1
OK
Cancel

UMN Map Server

- Development environment for building spatially enabled Internet applications
- University of Minesota
- Use more than coordinates systems in one view – on-line projectins (PROJ.4)
- Raster and vector data
- Output: raster map in GIF, PNG, JPG or WBMP

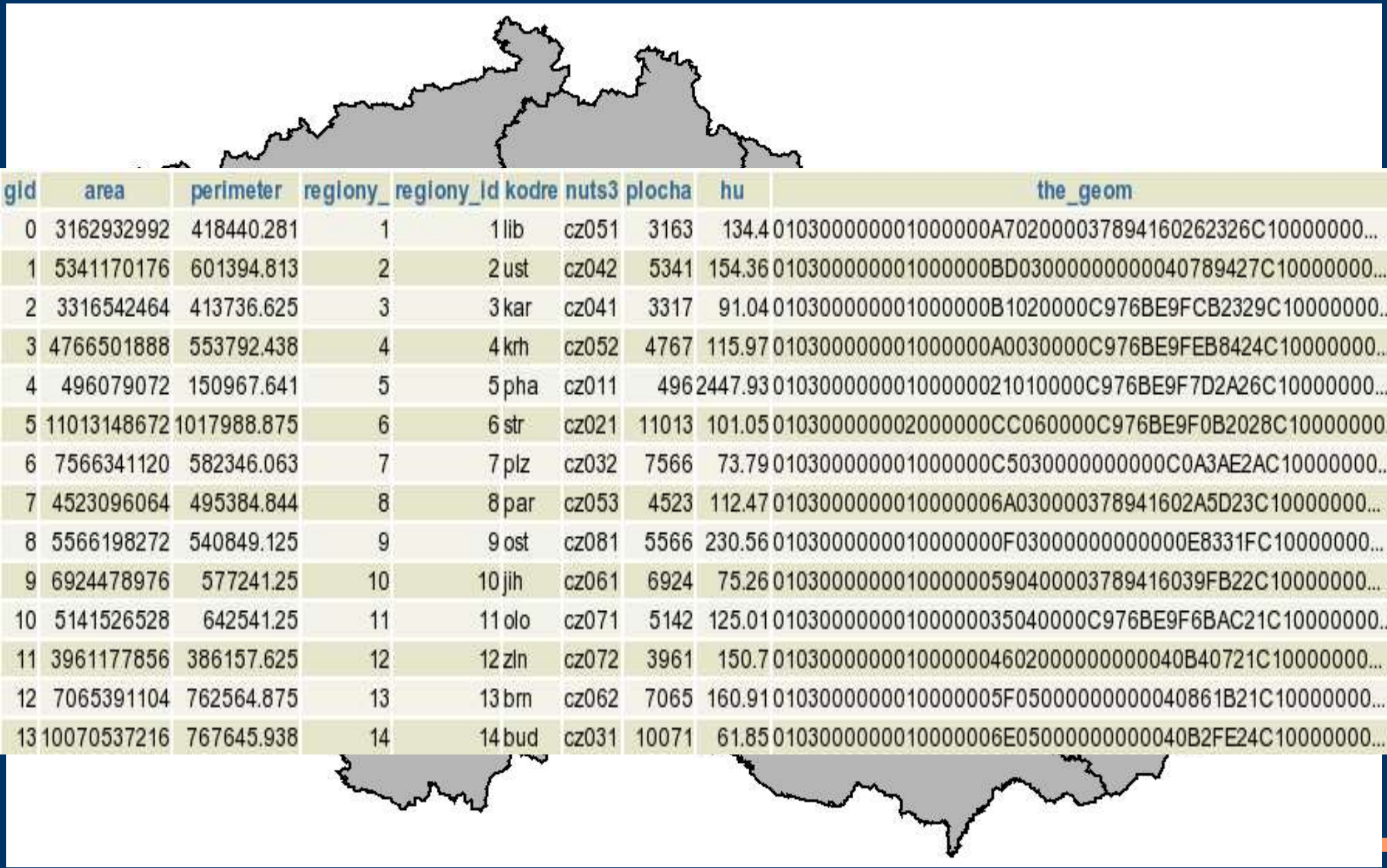
UMN Map Server



PostGIS

- Tool for managing geodata in RDBMS
- Based on OGC Simple Features for SQL
- Extension to PostgreSQL RDBMS

PostGIS



gid	area	perimeter	regiony_	regiony_id	kodre	nuts3	plocha	hu	the_geom
0	3162932992	418440.281	1	1	lib	cz051	3163	134.4	0103000000010000000A7020000378941602623 26C10000000...
1	5341170176	601394.813	2	2	ust	cz042	5341	154.36	0103000000010000000BD03000000000040789427C10000000...
2	3316542464	413736.625	3	3	kar	cz041	3317	91.04	0103000000010000000B1020000C976BE9FCB2329C10000000...
3	4766501888	553792.438	4	4	krh	cz052	4767	115.97	0103000000010000000A0030000C976BE9FEB8424C10000000...
4	496079072	150967.641	5	5	pha	cz011	496	2447.93	010300000001000000021010000C976BE9F7D2A26C10000000...
5	11013148672	1017988.875	6	6	str	cz021	11013	101.05	0103000000020000000CC060000C976BE9F0B2028C10000000...
6	7566341120	582346.063	7	7	plz	cz032	7566	73.79	0103000000010000000C5030000000000C0A3AE2AC10000000...
7	4523096064	495384.844	8	8	par	cz053	4523	112.47	010300000001000000006A0300003789416 02A5D23C10000000...
8	5566198272	540849.125	9	9	ost	cz081	5566	230.56	0103000000010000000F0300000000000 0E8331FC10000000...
9	6924478976	577241.25	10	10	jih	cz061	6924	75.26	010300000001000000059040000378941 6039FB22C10000000...
10	5141526528	642541.25	11	11	olo	cz071	5142	125.01	010300000001000000035040000C976BE9F6BAC21C10000000...
11	3961177856	386157.625	12	12	zln	cz072	3961	150.7	010300000001000000046020000000000 40B40721C10000000...
12	7065391104	762564.875	13	13	brn	cz062	7065	160.91	0103000000010000000 5F0500000000040861B21C10000000...
13	10070537216	767645.938	14	14	bud	cz031	10071	61.85	0103000000010000006E0500000000040B2FE24C10000000...

PostGIS

```
SELECT name FROM country WHERE
the_geom &&
Expand(GeomFromText('POINT(15.8 40.1)',-1),10)
   AND Distance(GeomFromText('POINT(15.8
   40.1)',-1),the_geom)<10
```

PostGIS

```
CREATE TABLE silnice_cr
AS SELECT Transform(the_geom, 102065), *
FROM silnice_eu WHERE the_geom && Transform
   ((SELECT the_geom FROM staty WHERE
   cntry_name='Czech Republic'), (SELECT srid
   FROM geometry_colums WHERE
   f_table_name='silnice_eu'))
```

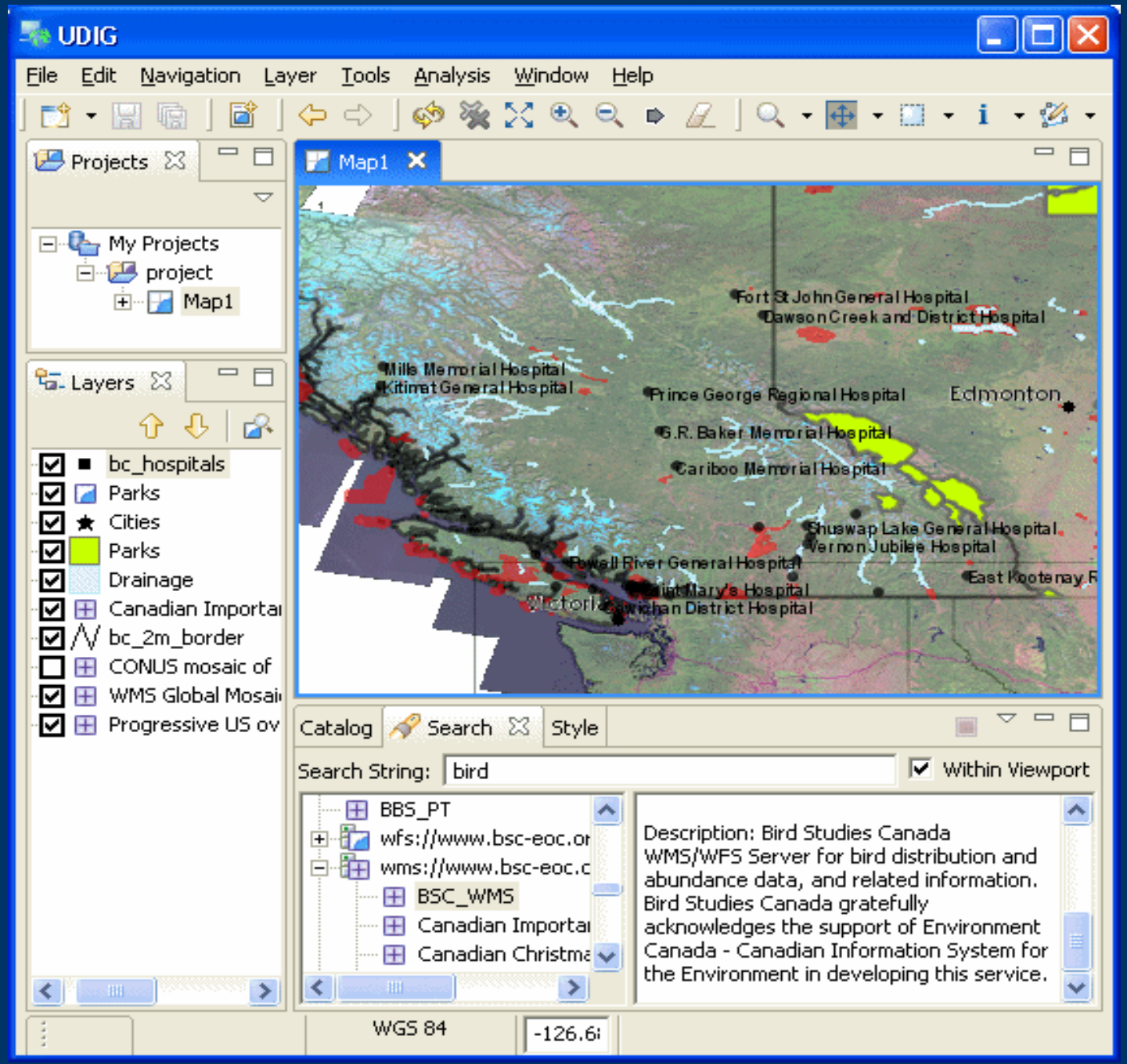
GDAL, OGR, PROJ.4, GeoTools

- GDAL – C library for raster data – reading writing
- OGR – C library for vector data – reading writing
- PROJ.4 – C library for reference system manipulation (transformation, projection, etc.)
- GeoTools – Java library for raster, vector data reading, writing and more

uDIG

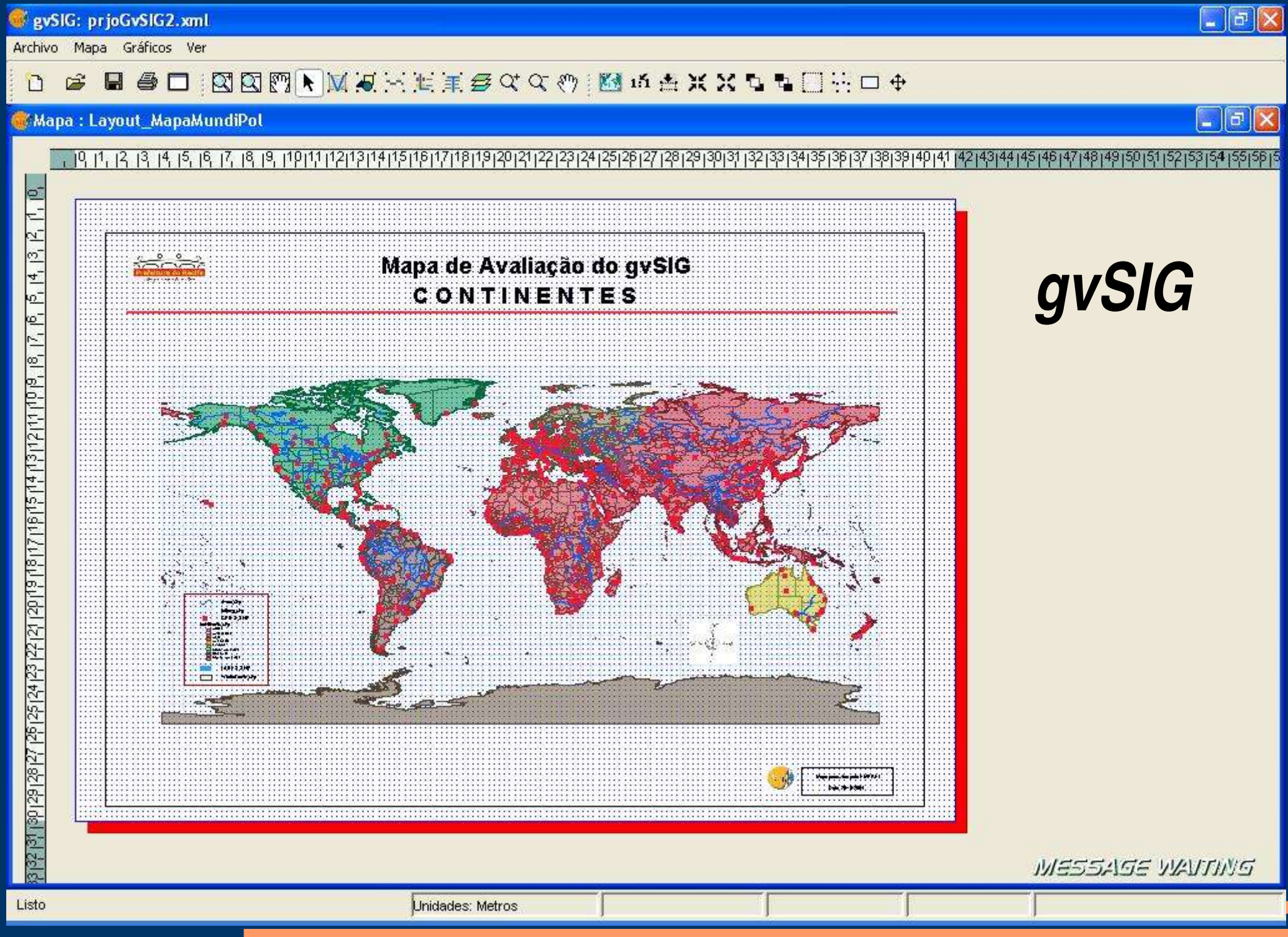
- User friendly Desktop Internet GIS
- WMS, WFS client
- Local data
- Mainly visualization

uDIG


UDIG
File Edit Navigation Layer Tools Analysis Window Help
Projects
My Projects
project
Map1
Layers
bc_hospitals
Parks
Cities
Parks
Drainage
Canadian Importa
bc_2m_border
CONUS mosaic of
WMS Global Mosai
Progressive US ov
Map1
Fort St John General Hospital
Dawson Creek and District Hospital
Mills Memorial Hospital
Kitimat General Hospital
Prince George Regional Hospital
Edmonton
G.R. Baker Memorial Hospital
Cariboo Memorial Hospital
Shuswap Lake General Hospital
Vernon Jubilee Hospital
Powell River General Hospital
East Kootenay R
Victoria
Catalog
Search
Style
Search String:
bird
Within Viewport
BBS_PT
wfs://www.bsc-eoc.or
wms://www.bsc-eoc.c
BSC_WMS
Canadian Importa
Canadian Christma
Description: Bird Studies Canada WMS/WFS Server for bird distribution and abundance data, and related information. Bird Studies Canada gratefully acknowledges the support of Environment Canada - Canadian Information System for the Environment in developing this service.
WGS 84
-126.6

gvSIG

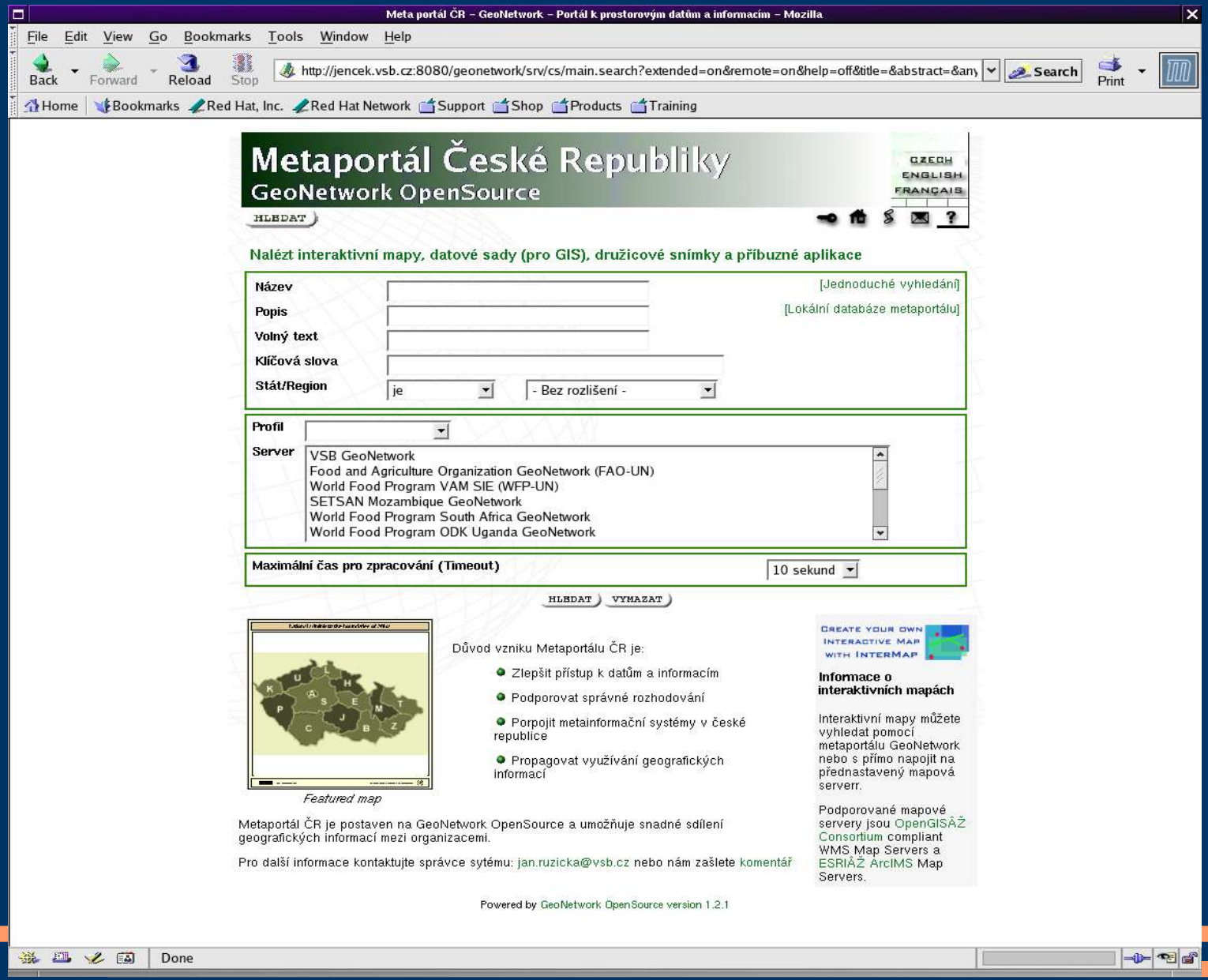
- Fast Desktop Solution
- Mainly visualization


gvSIG: prjoGvSIG2.xml
Archivo Mapa Gráficos Ver
Mapa : Layout_MapaMundiPol
Mapa de Avaliação do gvSIG
CONTINENTES
gvSIG
MESSAGE WAITING
Listo
Unidades: Metros

GeoNetwork Open Source

- Metainformation system
- ISO 19115, FGDC
- Searching – local, distributed

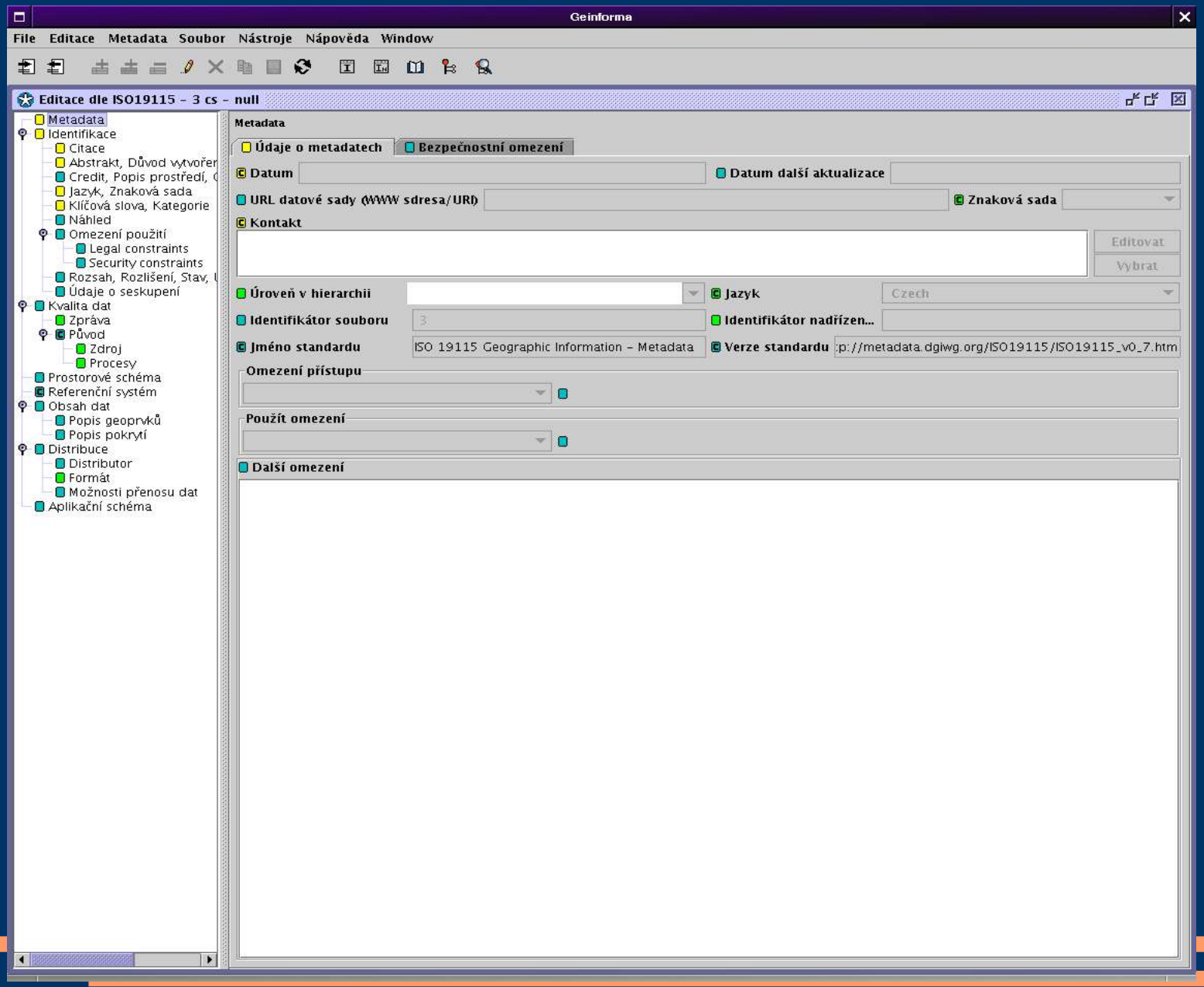
GeoNetwork Open Source



CatMDEdit

- Standalone metadata editor
- ISO 19115, FGDC, Dublin Core

CatMDEdit


Geinforma
File Editace Metadata Soubor Nástroje Nápověda Window
Editace dle ISO19115 - 3 cs - null
Metadata
Identifikace
Citace
Abstrakt, Důvod vytvoře
Credit, Popis prostředí,
Jazyk, Znaková sada
Klíčová slova, Kategorie
Náhled
Omezení použití
Legal constraints
Security constraints
Rozsah, Rozlišení, Stav,
Údaje o seskupení
Kvalita dat
Zpráva
Původ
Zdroj
Procesy
Prostorové schéma
Referenční systém
Obsah dat
Popis geoprvků
Popis pokrytí
Distribuce
Distributor
Formát
Možnosti přenosu dat
Aplikační schéma
Metadata
Údaje o metadatech
Bezpečnostní omezení
Datum
Datum další aktualizace
URL datové sady (WWW sdresa/URI)
Znaková sada
Kontakt
Editovat
Vybrat
Úroveň v hierarchii
Jazyk
Czech
Identifikátor souboru
3
Identifikátor nadřízen...
Jméno standardu
ISO 19115 Geographic Information - Metadata
Verze standardu
:p://metadata.dgiwg.org/ISO19115/ISO19115_v0_7.htm
Omezení přístupu
Použít omezení
Další omezení

GISák LiveCD

Project team:

František Klímek
Jan Růžička
Michal Šeliga
Pavel Děrgel

Objective goals

- Give the set of open source software to our students in one compact form
- Give the tutorial data and set of tools to high schools in one compact form
- Prepare set of useful tutorials for used software
- Prepare data from the Czech republic available free of charge
- Advertise open source GIS tools
- Advertise OS Linux

Ideas

- Give the platform for distribution of educational materials
- Give the platform for making tutorials and educational materials
- Make the tools, that automatically made tutorials with defined rules and give users possibilities for easy distributions tutorials

GISák LiveCD

- Live „bootable“ CD
- System runs from CD and RAM, user does not need to install it to hard disc
- Requirements
  - minimal: 900Mhz, 128Mb Ram, 50x cd-drive
  - recommended: 1,5Ghz, 256Mb RAM, 50x cd-drive
  - optimal: 2Ghz or more, 512Mb RAM, 50x cd-drive

CD includes – geodata

- Measured by our students
- Measured by students from other Czech universities
- From state and private organisations (we would like to ask them to give some sample data for the Live CD)
- „Spearfish“ data set, instaled with GRASS
- Other free geodata, that are instaled with open source GIS software

CD includes – study materials

- Tutorials for GRASS, with using geodata from Czech Republic
- Tutorials for JUMP, with using geodata from Czech Republic
- Short, simple tutorials for working with Thuban and QuantumGIS
- Free czech educations materials for open source GIS tools in other formats
  (*.pdf, off-line HTML)

CD includes – software

- GRASS 6
- JUMP
- QGIS
- Thuban
- GPS Drive
- PostGIS
- UMN Map Server

How to obtain CD?

- Download from http://gisak.vsb.cz/livecd
- Write to: jan.ruzicka@vsb.cz