

GIS.lab in real world examples

Ivan Minčík

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Introduction

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 - ▶ powerful plug-and-play client machines
- ▶ Open Source software

Wide range of different features

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- ▶ web GIS project publishing

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- ▶ GIS data processing and analysis
- ▶ web GIS project publishing
- ▶ backup and rapid failure recovery

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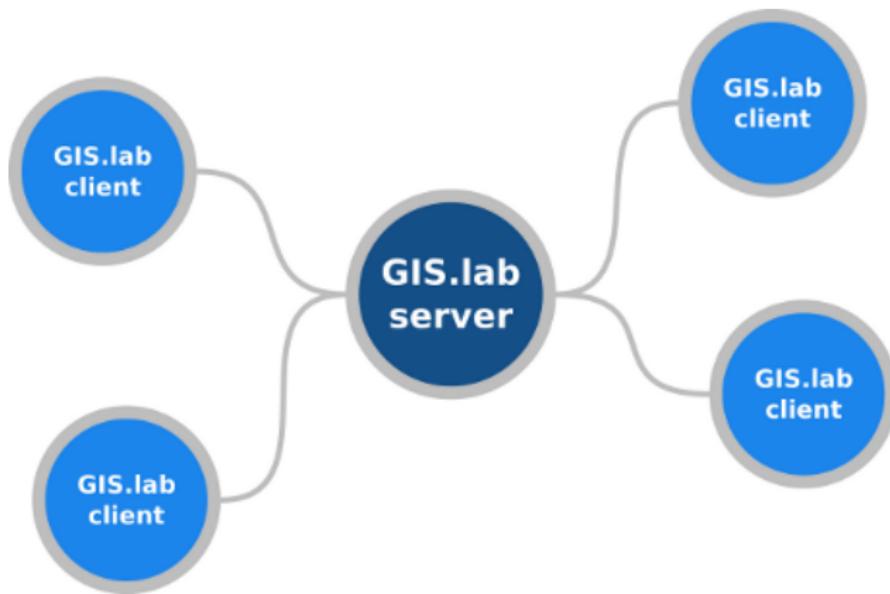
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- ▶ own GIS software stack with bug fixing patches

Advantages

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- ▶ no real dependency on any third-party service
- ▶ own GIS software stack with bug fixing patches
- ▶ advantages of web services and desktop software together

GIS.lab architecture

- ▶ GIS.lab server - services
- ▶ GIS.lab client - network boot, high performance fat client



Development

Versions

- ▶ currently preparing for 0.4 release
- ▶ general production release 0.5 in August 2014

Authors

- ▶ Marcel Dancák
- ▶ Ivan Minčík

Sponsor

- ▶ GISTA s.r.o.

Installation

Requirements

- ▶ server machines with Linux, Mac OS or Windows installed
- ▶ client machines with no OS **or** any OS installed

Installation in LAN - hard way

Install dependencies

- ▶ install VirtualBox, Vagrant, Git (optional)

Install GIS.lab

- ▶ \$ vagrant box add precise32-canonical http:// ...
- ▶ download installation ZIP **or** \$ git clone ...
- ▶ \$ vagrant up

25 minutes

0 EUR

Installation in LAN - easy way - GIS.lab Unit

Plug-and-play

5 minutes
450 EUR

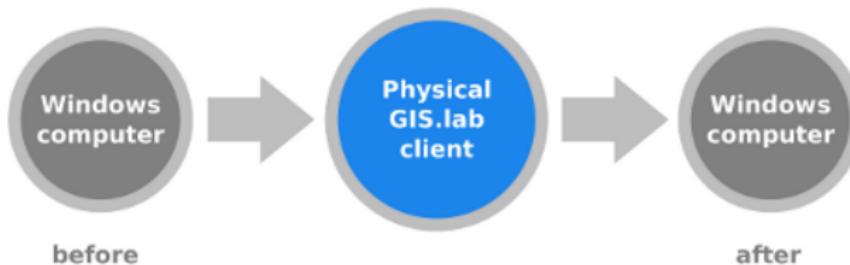
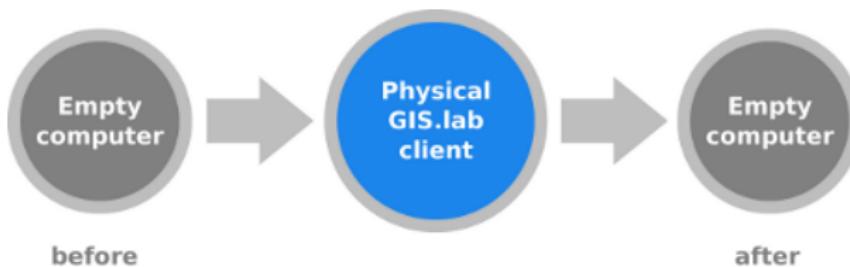


GIS.lab client

Client modes

Physical client

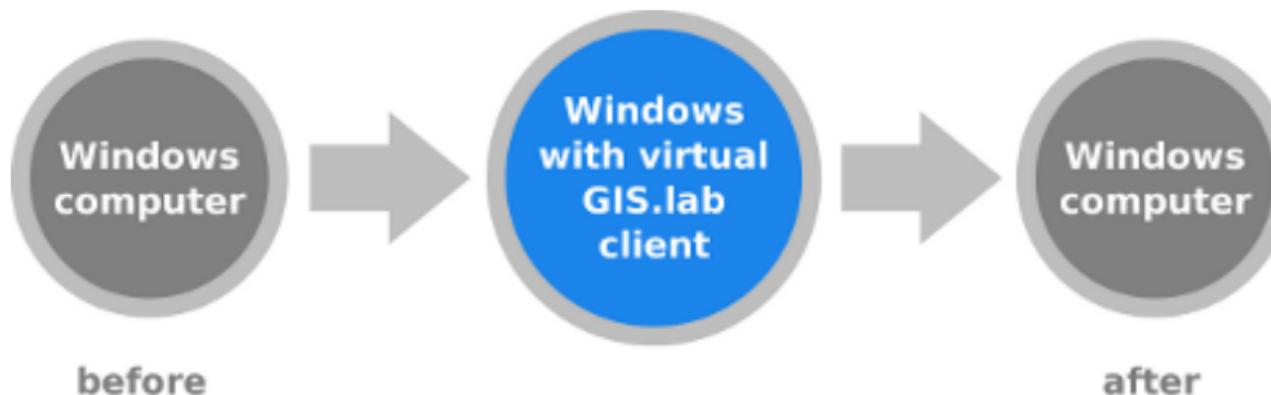
- ▶ best performance
- ▶ original OS is temporary not available



Client modes

Virtual client

- ▶ lower performance
- ▶ original machine OS and GIS.lab client run side-by-side



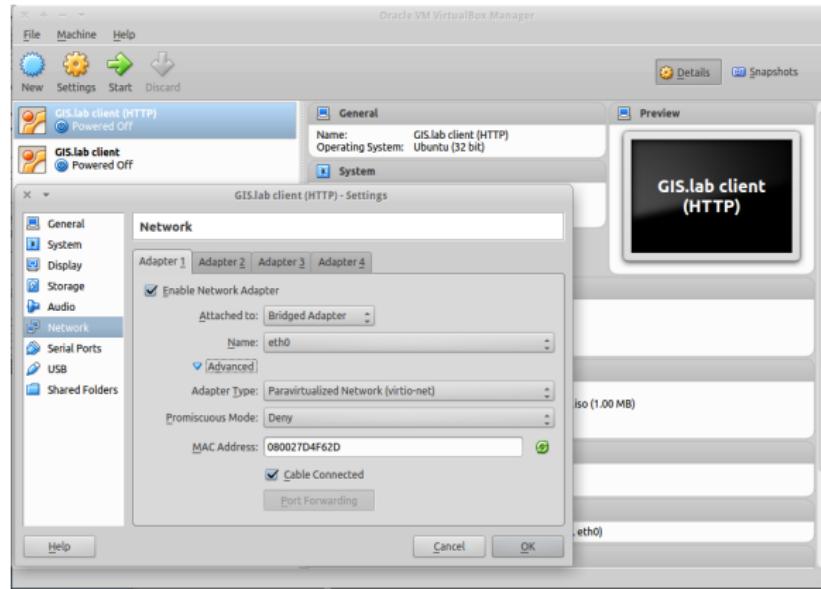
Client modes

Other possibilities

- ▶ third party LAN members (DHCP)
- ▶ Internet browsers (web.gis.lab)

Virtual client configuration

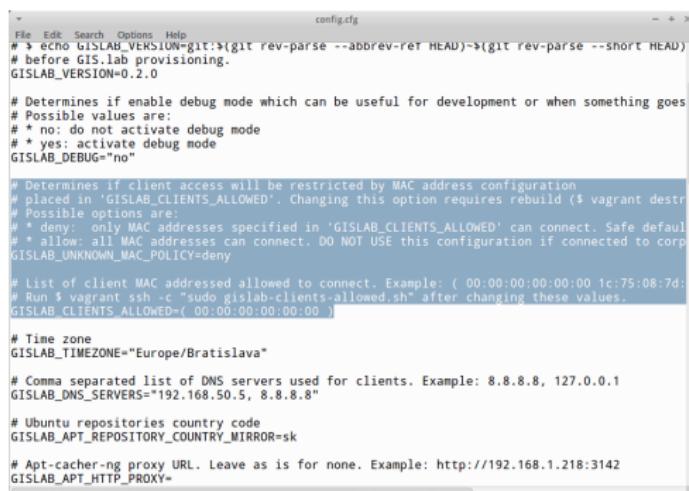
- ▶ create new VirtualBox machine with no hard drive
- ▶ boot from network



Access policy by MAC

config-user.cfg

- ▶ GISLAB_UNKNOWN_MAC_POLICY=deny
- ▶ GISLAB_CLIENTS_ALLOWED=(08:00:27:d4:f6:2d)
- ▶ \$ vagrant ssh -c "sudo gislab-allowmachines"



```
config.cfg
-
File Edit Search Options Help
# $ echo GISLAB_VERSION=$(git rev-parse --abbrev-ref HEAD)$(git rev-parse --short HEAD)
# before GIS.lab provisioning.
GISLAB_VERSION=0.2.0

# Determines if enable debug mode which can be useful for development or when something goes
# Possible values are:
# * no: do not activate debug mode
# * yes: activate debug mode
GISLAB_DEBUG="no"

# Determines if client access will be restricted by MAC address configuration
# placed in 'GISLAB_CLIENTS_ALLOWED'. Changing this option requires rebuild ($ vagrant destro
# Possible options are:
# deny: only MAC addresses specified in 'GISLAB_CLIENTS_ALLOWED' can connect. Safe default
# allow: all MAC addresses can connect. DO NOT USE this configuration if connected to corp
GISLAB_UNKNOWN_MAC_POLICY=deny

# List of client MAC addressed allowed to connect. Example: ( 00:00:00:00:00:1c:75:08:7d
# Run $ vagrant ssh -c "sudo gislab-clients-allowed.sh" after changing these values.
GISLAB_CLIENTS_ALLOWED=( 00:00:00:00:00:00 )

# Time zone
GISLAB_TIMEZONE="Europe/Bratislava"

# Comma separated list of DNS servers used for clients. Example: 8.8.8.8, 127.0.0.1
GISLAB_DNS_SERVERS="192.168.50.5, 8.8.8.8"

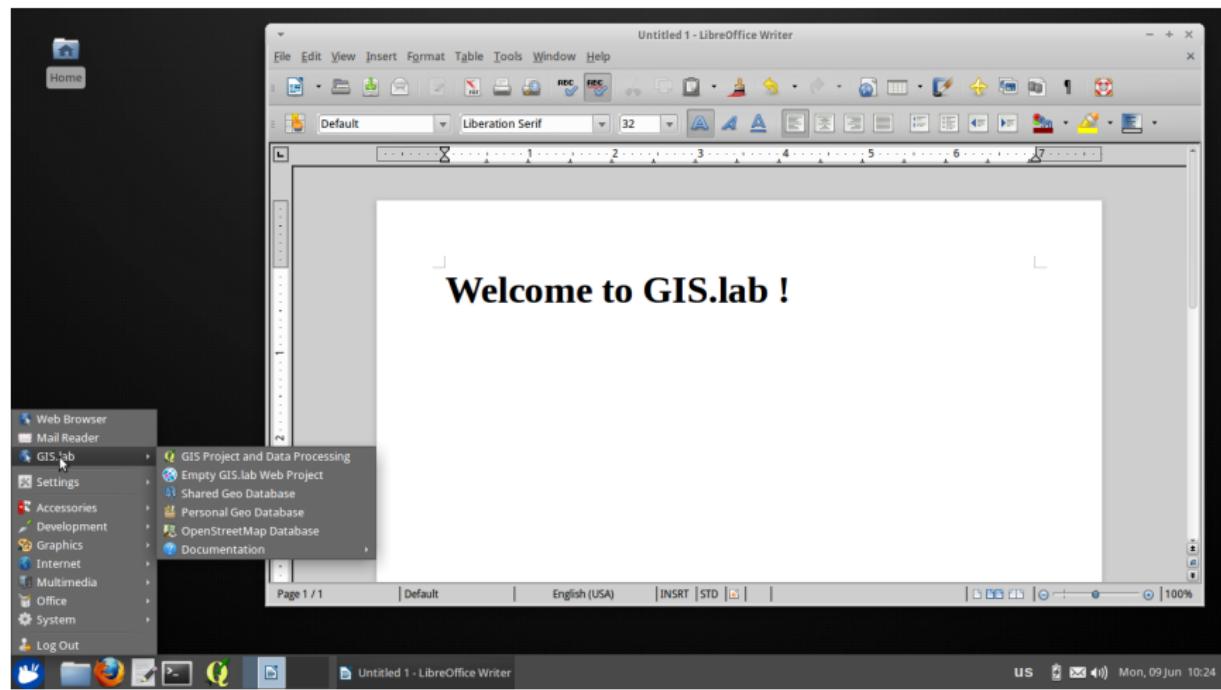
# Ubuntu repositories country code
GISLAB_APT_REPOSITORY_COUNTRY_MIRROR=sk

# Apt-cacher-ng proxy URL. Leave as is for none. Example: http://192.168.1.218:3142
GISLAB_APT_HTTP_PROXY=
```

Client login



Client desktop environment

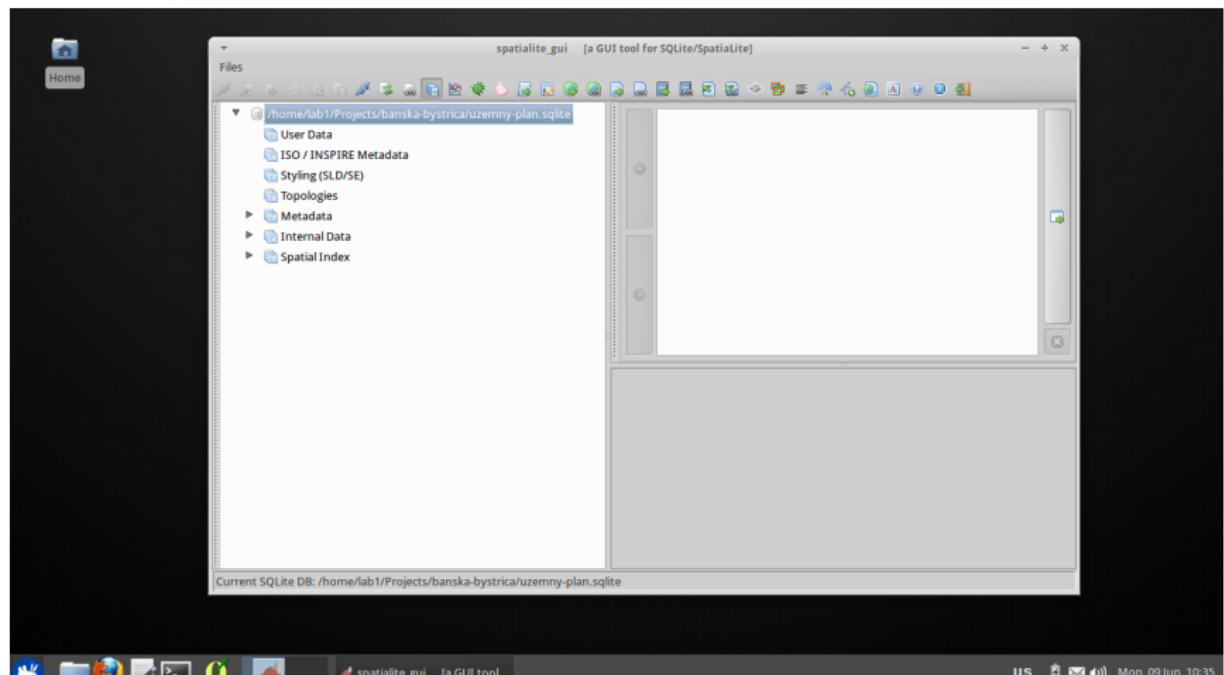


Real world example

Urban planning map of city Banská Bystrica

Spatial DB creation

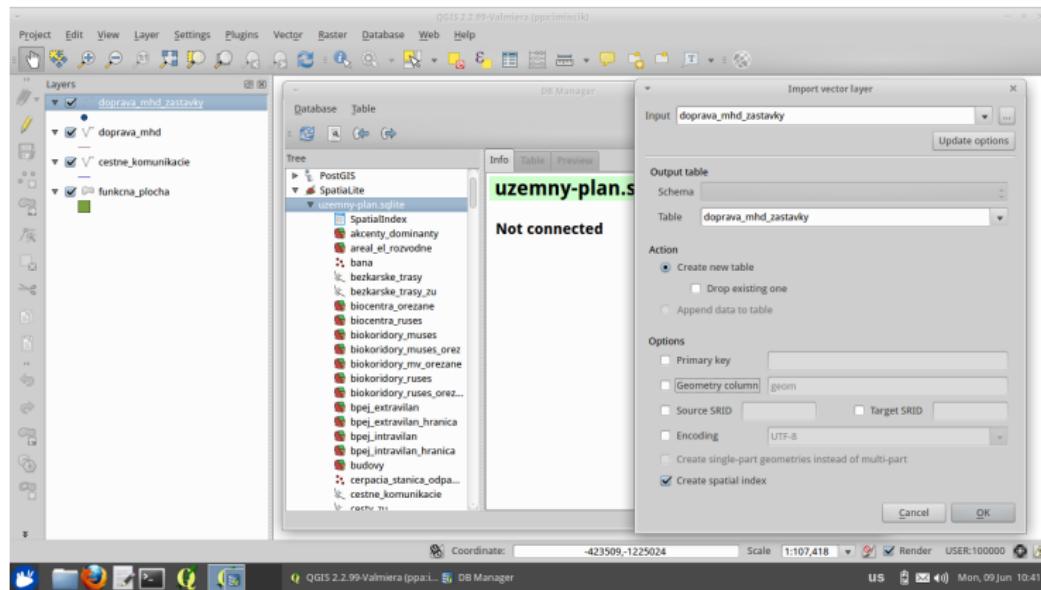
- ▶ create new SpatiaLite DB in SpatiaLite GUI



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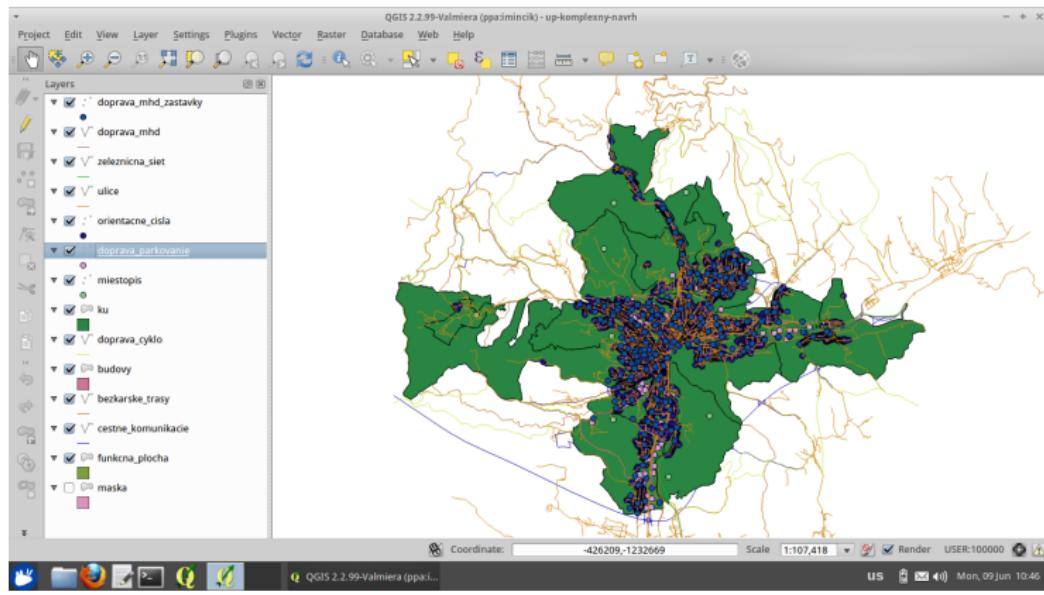
Data import

- ▶ inspect data in QGIS
- ▶ import layers to Spatialite DB using DB Manager plugin



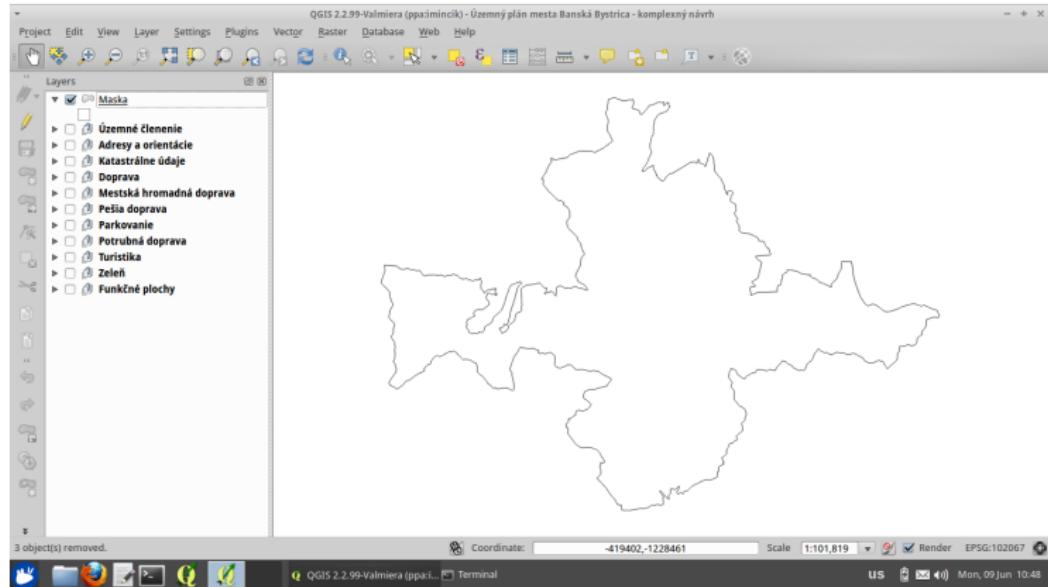
GIS project creation

- ▶ load imported layers back from SpatiaLite DB to QGIS



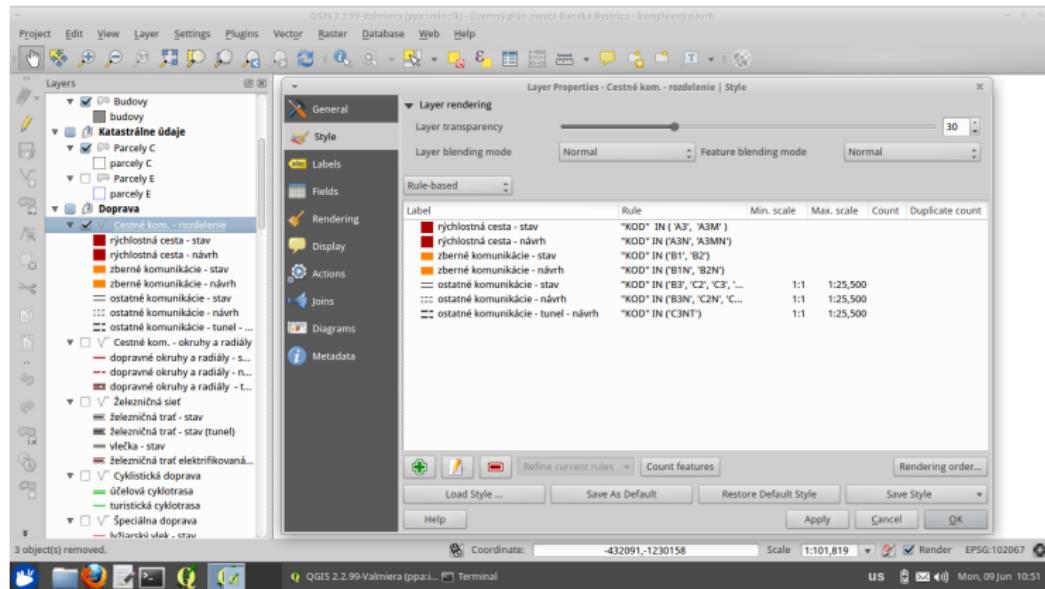
TOC structure

- ▶ create layer groups
- ▶ rename layers and move to corresponding groups

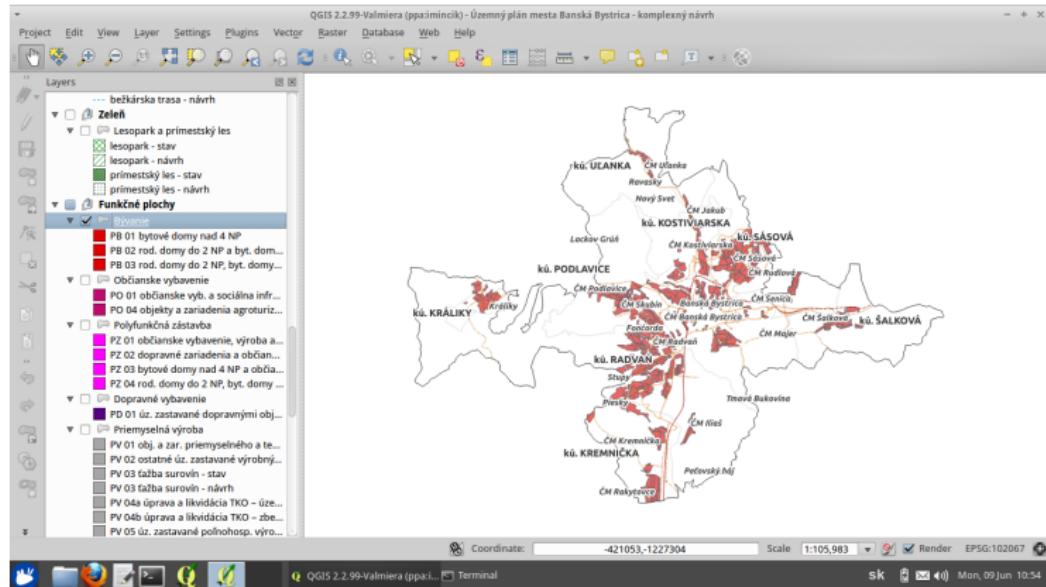


Layers styling

- ▶ assign styles and map symbols to each layer
- ▶ categorize layer by attribute values

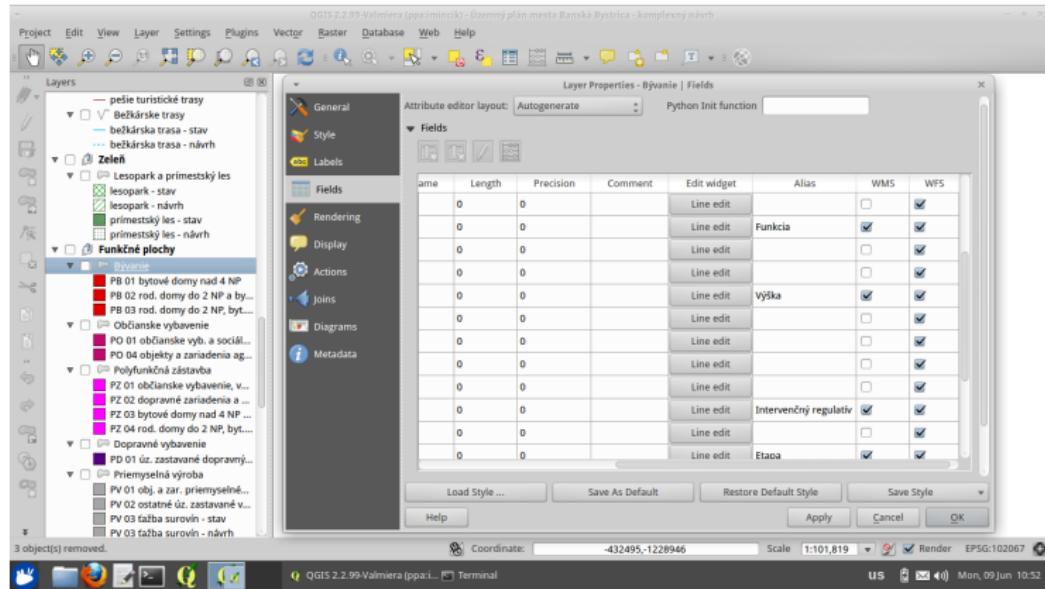


Layers styling



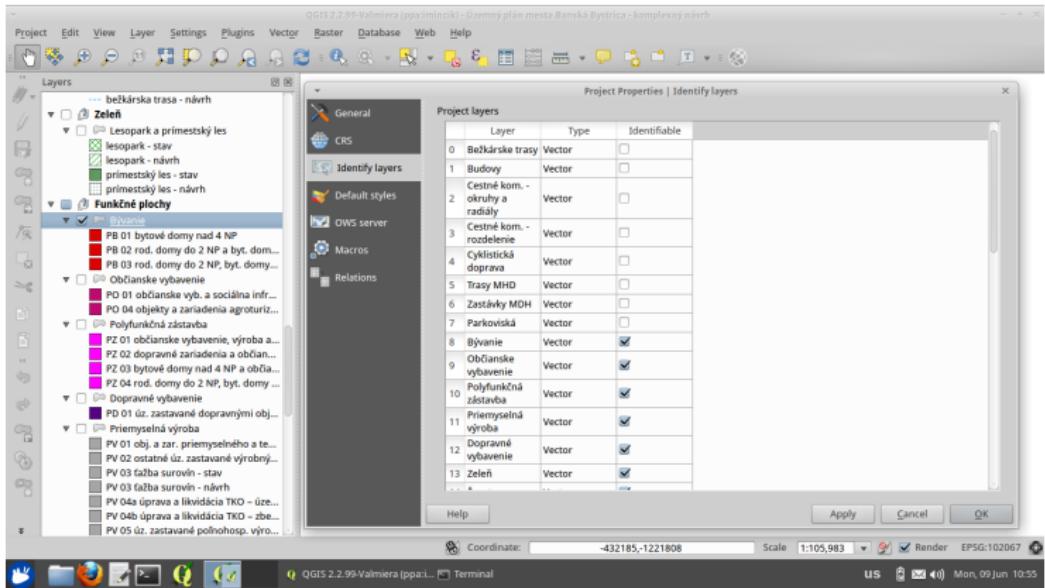
Attributes

- ▶ assign human names to attribute fields
- ▶ create attribute form



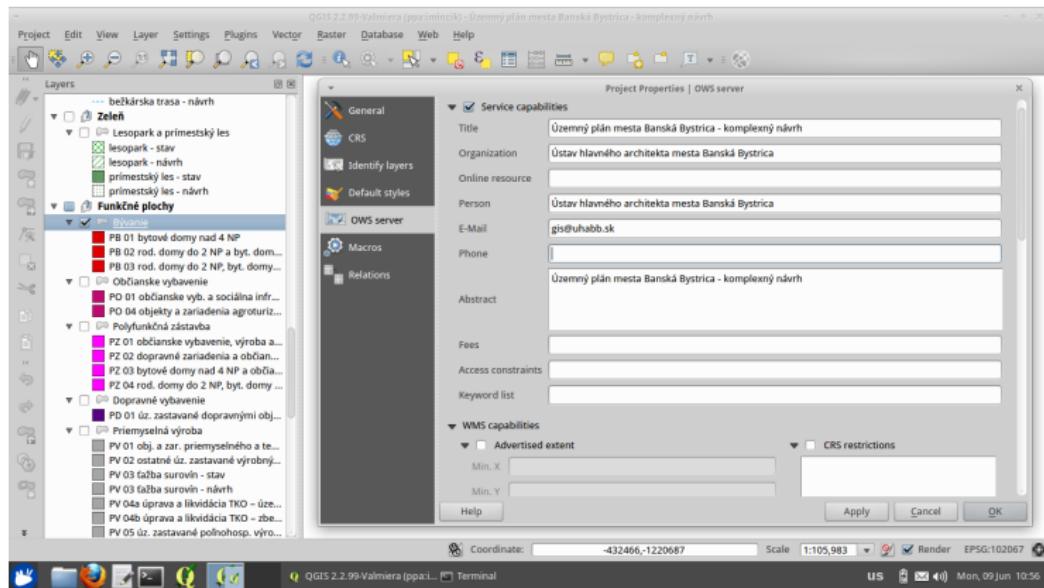
Feature information

- ▶ configure layers with activated feature info



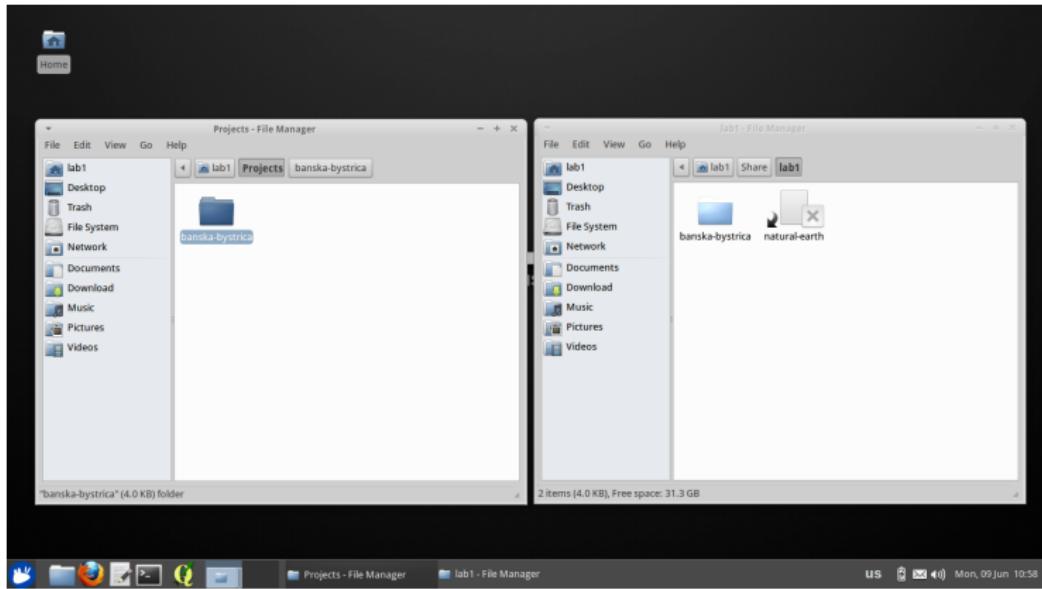
Project properties

- ▶ assign project title, abstract, author name and email



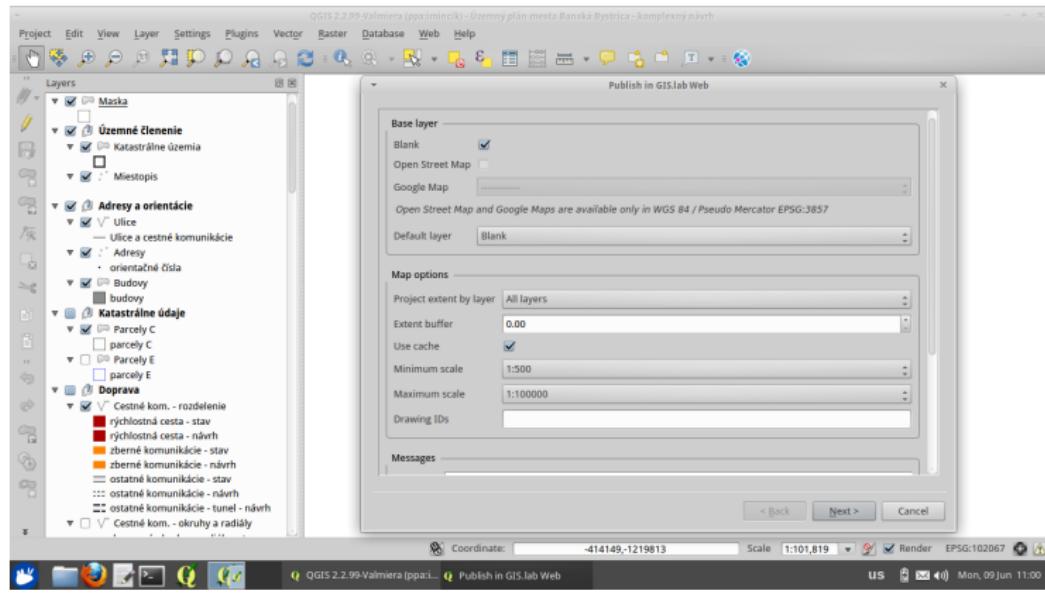
Project publishing

- ▶ save project
- ▶ move project to Share/\$USER directory



Project publishing

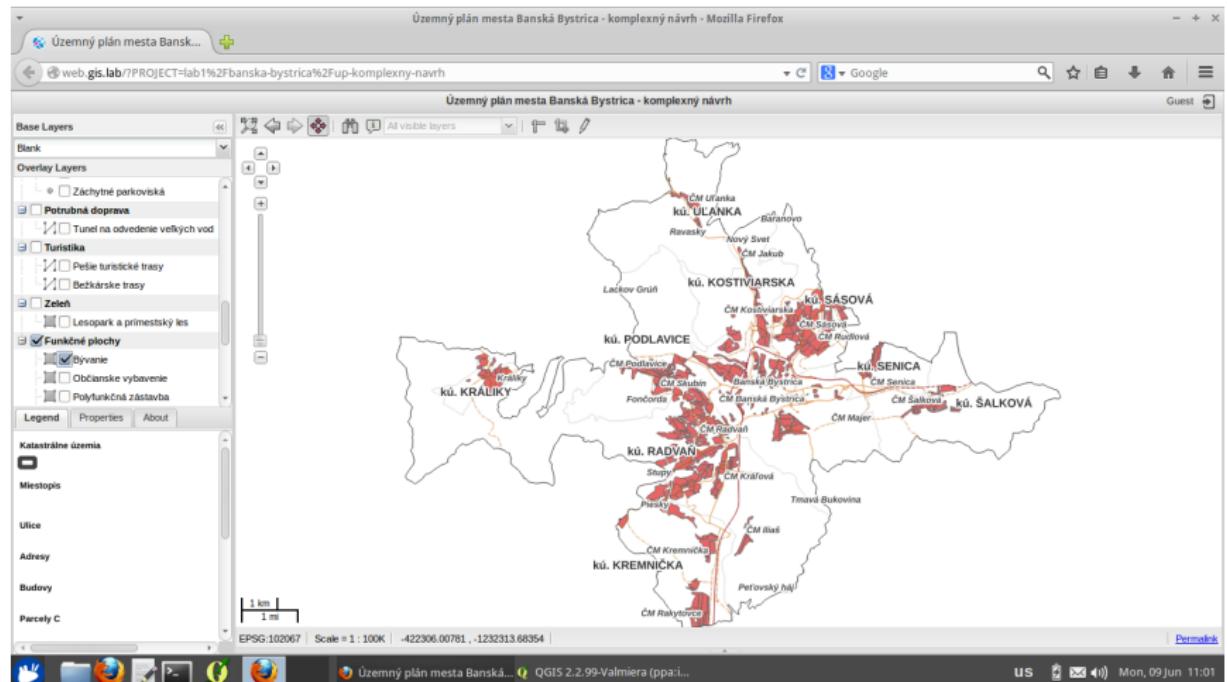
- ▶ publish project in GIS.lab Web



GIS.lab Web

GIS.lab Web

<http://web.gis.lab/?PROJECT=path-to-project>



GIS.lab Web

- ▶ base layers (WMS, OSM, Google), overlay layers from QGIS project

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- ▶ measure lines and polygons

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- ▶ print output creation

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- ▶ permalink
- ▶ intelligent automatic caching

GIS.lab Web search

Územný plán mesta Banská Bystrica - komplexný návrh - Mozilla Firefox

web.gis.lab/?PROJECT=lab1%2fbanska-bystrica%2Fup-komplexny-navrh

Guest

Base Layers

Blank

Overlay Layers

- Záchranné parkoviská
- Potrubná doprava**
- Tunel na odvedenie veľkých vod
- Turistika
 - Petie turistickej trasy
 - Bielkarske trasy
- Zelen
 - Lesopark a prírodný les
- Funkčné plochy
 - Byvane
 - Občianske vybavenie
 - Polifunkčná zástavba

Legend Properties About

Katastrálne územia

Miestopis

Ulice

Adresy

Budovy

Parcely C

Byvane Logical operator: AND Limit: 50

Funkcia = PB 01

Výška IN 5, 9

Etapa <= N

Popis LIKE Byvanie

Search

Územný plán mesta Banská Bystrica - komplexný návrh

Ravasky Nový Svet ČM Jakub kú. KOSTIĽIARSKA ČM Kostíľarska kú. SÁSOVÁ ČM Sásová ČM Radová kú. SENICA ČM Senica ČM Šalková kú. ŠALKOVÁ ČM Majer kú. RADVAN Stupy ČM Kráľová Piesky ČM Iliaš

Number of results: 3

Byvanie

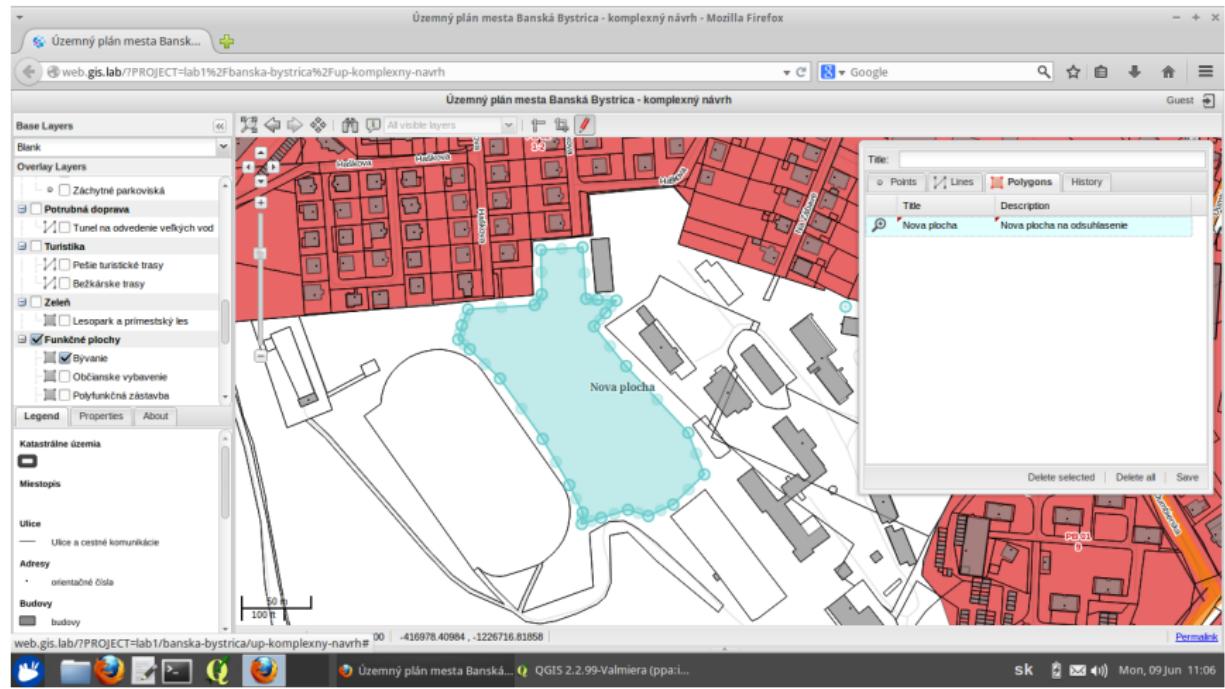
Funkcia	Výška	Intervenčný reg...	Etapa	Popis
PB 02	2-3	0	S	PB 02 Byvanie ... Regulárny
PB 02	2	0	S	PB 02 Byvanie ... Regulárny
PB 02	1-2	0	S	PB 02 Byvanie ... Regulárny

web.gis.lab/?PROJECT=lab1/banska-bystrica/up-komplexny-navrh#OK -417913.92605 , -1225037.64580 | Permalink

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The screenshot shows a web-based GIS application for urban planning in Banská Bystrica. The main interface includes a map of the city area with various districts labeled. A search dialog is open, filtering for residential buildings (Byvanie) with specific characteristics: Function (Funkcia) set to PB 01, Height (Výška) set to 5 or 9, and Stage (Etapa) less than or equal to N. Below the map is a table of results, which lists three entries for residential buildings (PB 02) across different height ranges (2-3, 2, 1-2) and stages (S). The bottom of the screen displays browser navigation buttons and a status bar indicating the URL and current date and time.

GIS.lab Web drawing



Amazon AWS provider

Installation in Amazon AWS

Install dependencies

- ▶ \$ vagrant plugin install vagrant-aws

config-user.cfg

- ▶ configure Amazon credentials, placement and security zone

Install GIS.lab server

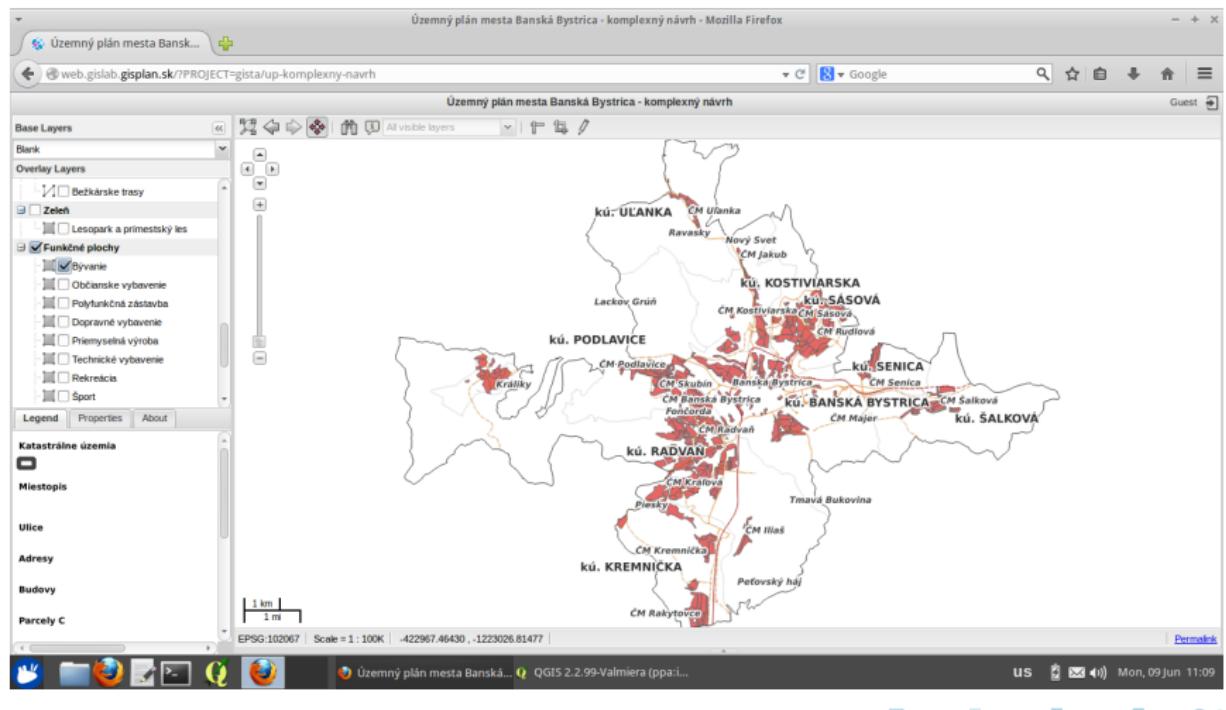
- ▶ \$ vagrant up --provider=aws

5 minutes

200 EUR / month

GIS.lab Web in Amazon AWS

- ▶ copy project files on AWS server



Future plans

Future plans

- ▶ web management interface
- ▶ multiple templates for GIS.lab Web
- ▶ GIS.lab Web interface for mobile devices
- ▶ GIS.lab Workstation
- ▶ Docker
- ▶ load balanced cluster
- ▶ decentralized GIS.lab network
- ▶ test suite - GIS software stack, GIS.lab services and features

Final notes

Where to use GIS.lab ?

- ▶ virtual desktop infrastructure for LAN
- ▶ public map service in cloud
- ▶ crowd mapping
- ▶ development and testing environment
- ▶ education and Open Source GIS software advocacy
- ▶ rapid deployment of crisis management command center with spatial support

Final notes

We are looking forward to welcome new users, testers and developers.

<http://imincik.github.io/gis-lab>

Thanks for attention.

Ivan Minčík, ivan.mincik@gmail.com

Questions ?