

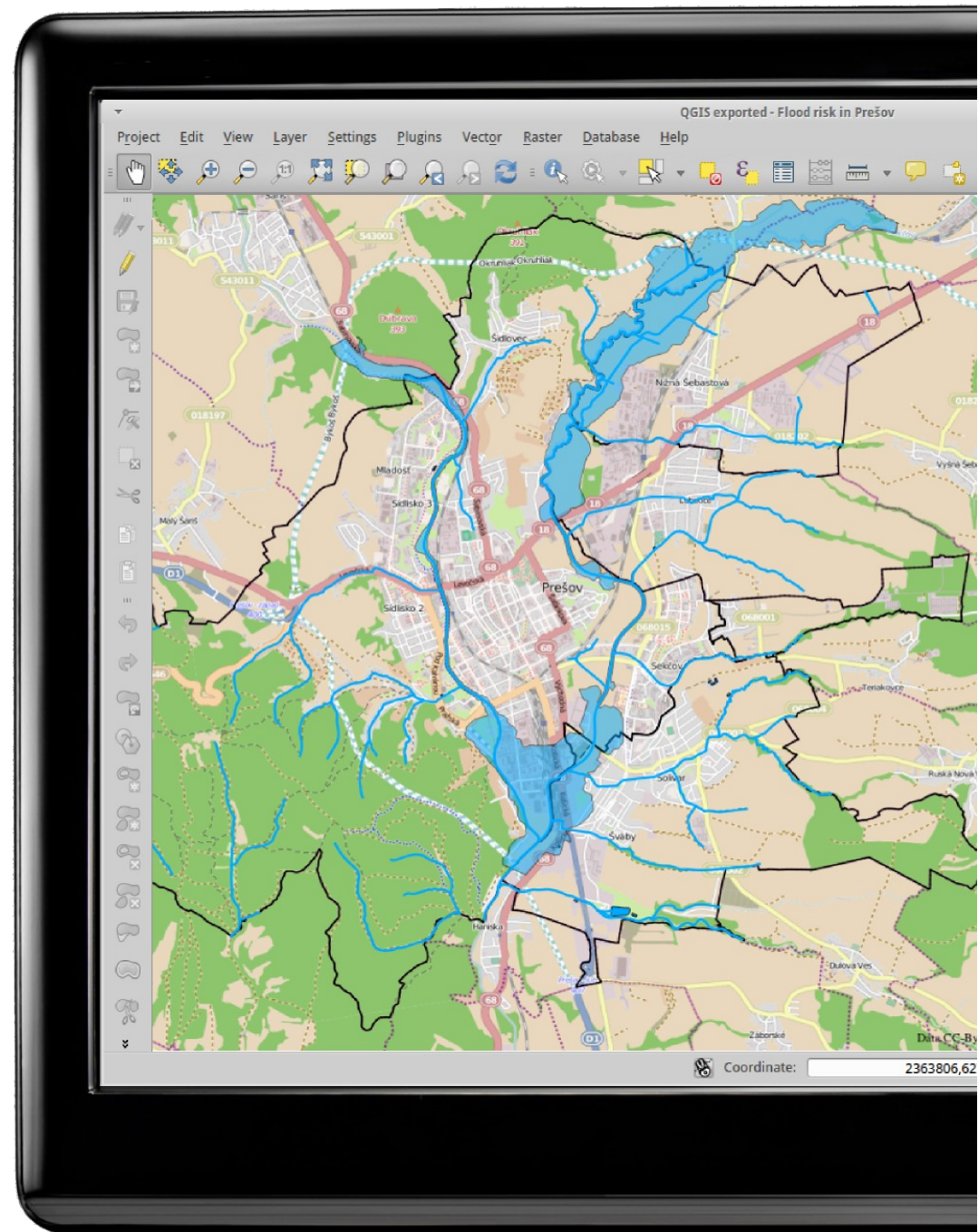
# GIS.lab

OPEN SOURCE GIS LABORATORY

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# What does it take to build a small GIS office?



## Conditions

- ✓ 12 people staff with equipment
- ✓ Server and client hardware
- ✓ No software installed
- ✓ All hardware connected to LAN

# What does it take to build a small GIS office?

## **Requirements**

- Office suite and GIS software
- Central file data storage and sharing
- Central GIS vector and raster data storage and sharing
- Simple map publishing solution (web)
- Collaboration tools
- Central backup
- Quick hardware failure recovery

# How to do it?



# How to do it?

## **Legacy approach**

### **Server**

- Server operating system
- Central authentication
- Internet connection (DNS, proxy)
- Email
- File storage and sharing
- Geo-database
- Mapserver (WMS, WFS)
- Web GIS application

# How to do it?

## **Legacy approach**

### **Workstations**

- Desktop operating system (Win 8 or Win 7?)
- Security
- User account
- Desktop environment customization
- Office suite
- Email, chat
- Special software (GIS)
- LAN services

# How to do it?

## **Legacy approach**

**? days, weeks, months**

**? EUR**

# How to do it?

## **GIS.lab** approach

- One command to install server and clients

**20 minutes**

**0 EUR**



# How to do it?

## **GIS.lab Unit approach**

- Plug-and-play

**0 minutes**

**450 EUR**



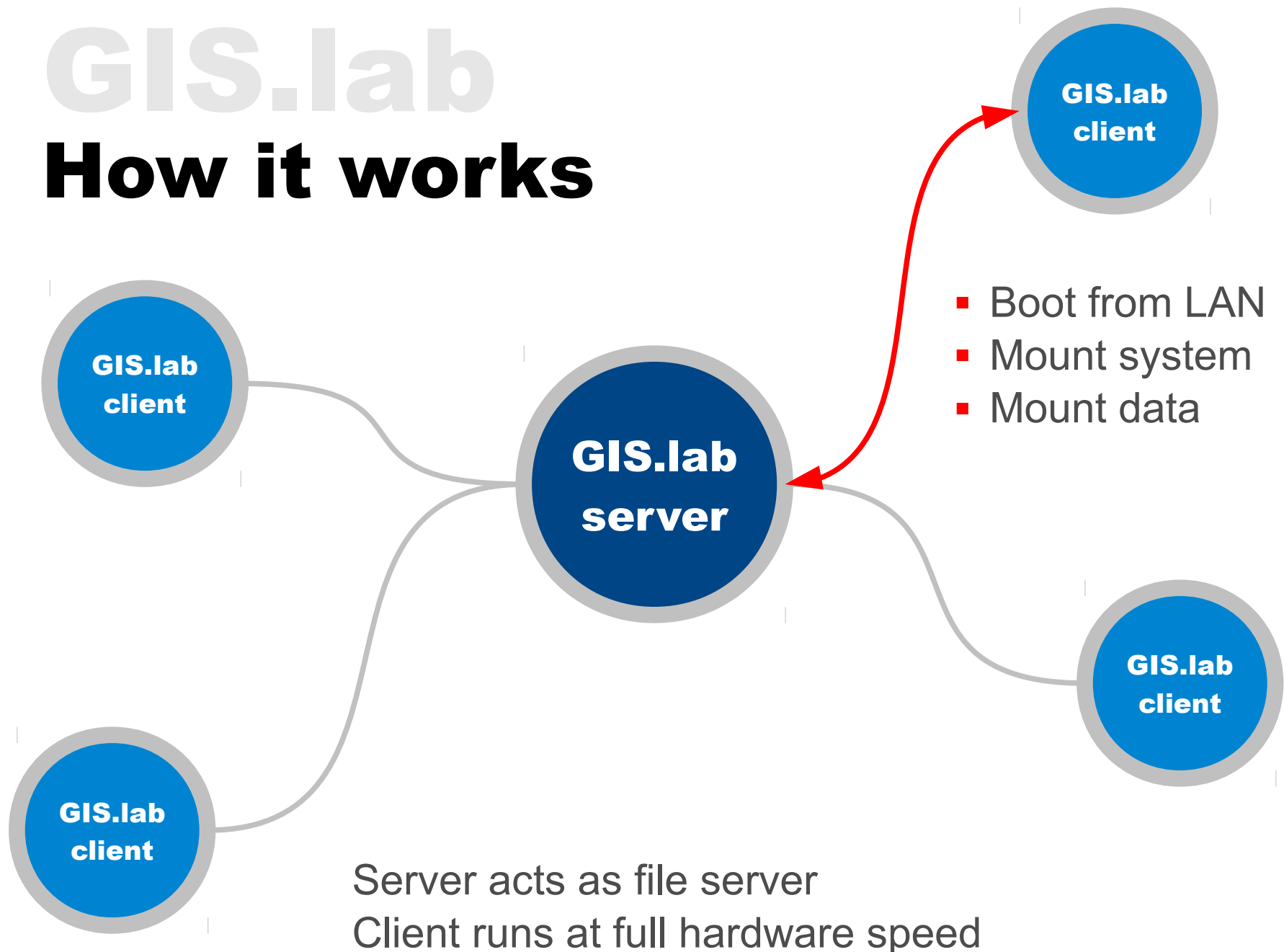
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## **How it works**



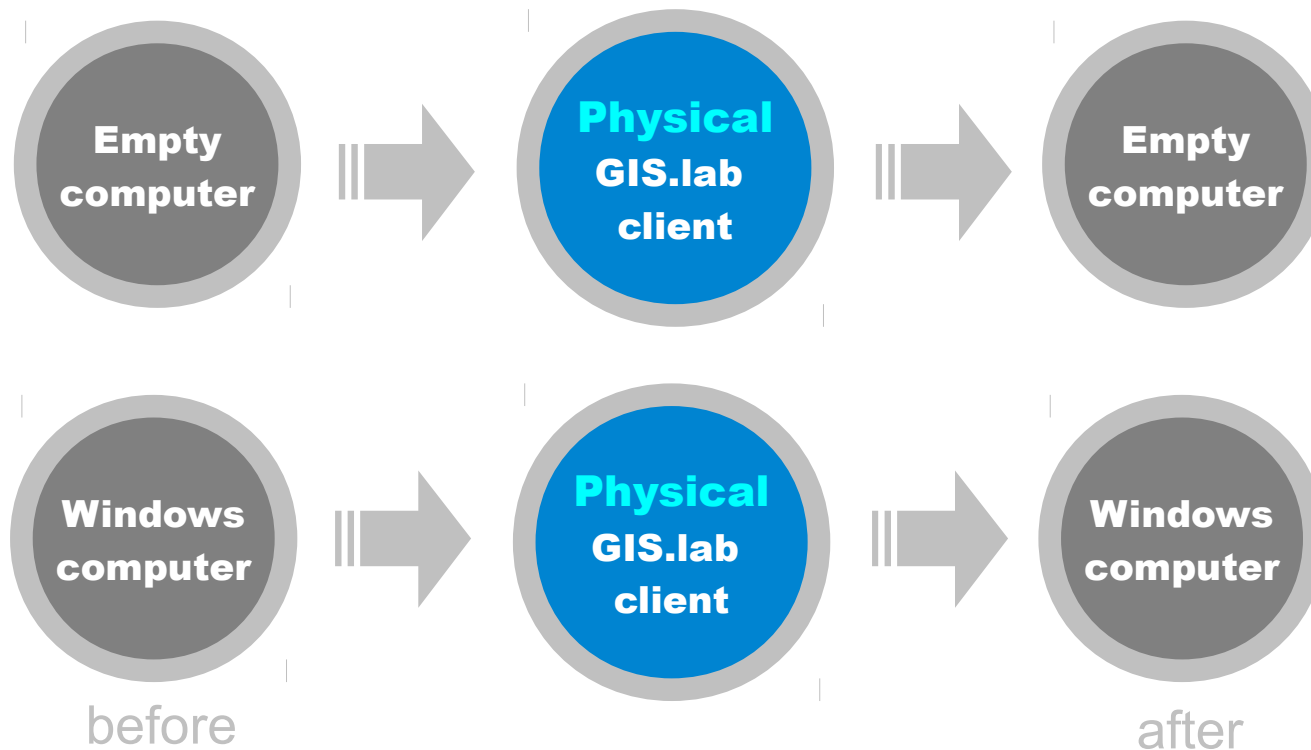
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## How it works



# GIS.lab

## How it works



Any computer can be GIS.lab client

# GIS.lab

## How it works



Any computer can be GIS.lab client



# Features and benefits

- **Open Source** software (GNU GPL 3)
- **Plug-and-play** solution GIS.lab Unit
- **No hard dependency on any other Internet service**  
(with exception on OSM and Google maps)
- **General usage platform** (not limited to GIS)

## Features and benefits

- **Extremely low maintenance costs**
  - + zero time to install new client machine
  - + central distribution of client systems with rollback
  - + rapid recovery from hardware failure
- **High performance client systems** (opposite of thin client)

## Features and benefits

- **Server services**
  - + central authentication
  - + file storage and sharing
  - + GIS data storage and sharing (GeoDatabases)
  - + OWS services (WMS, WFS)
  - + central backup





# Features and benefits

- **Office suite**

- + text documents, tables and presentations processor
- + internet browser
- + email and chat client
- + images and video viewer and editor

## Features and benefits

### ■ GIS features

- + OpenStreetMap, Google base maps
- + GIS data editor (desktop and web)
- + GIS analysis tools
- + print composer
- + database manager and editor
- + automatic web publishing tool (WebGIS)

## **Use case**

- **Teaching and studying platform** for GIS and Unix technologies
- **Production environment** for small GIS businesses
- **GIS software development environment**
- **Supercomputing**

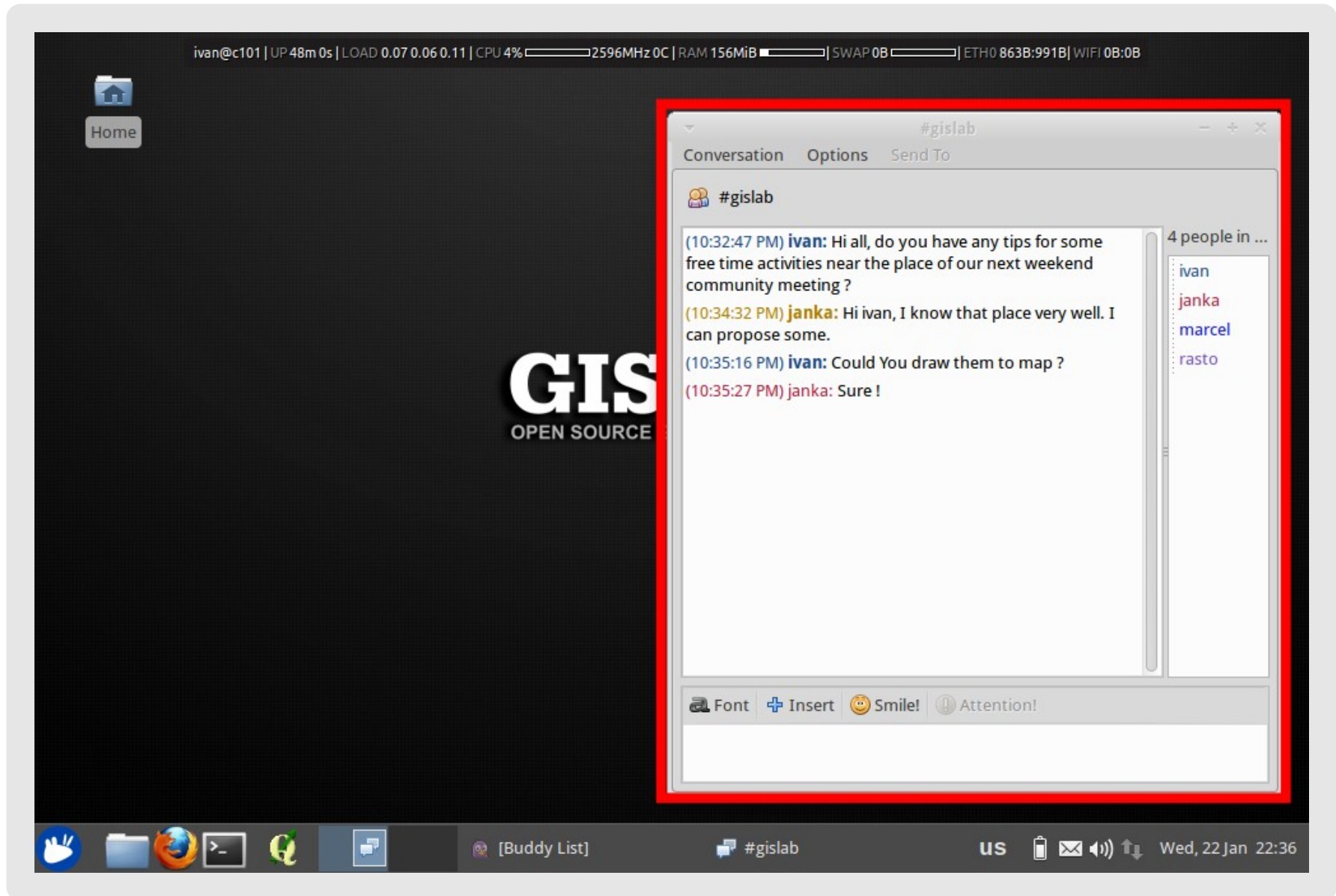
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## Example work flow

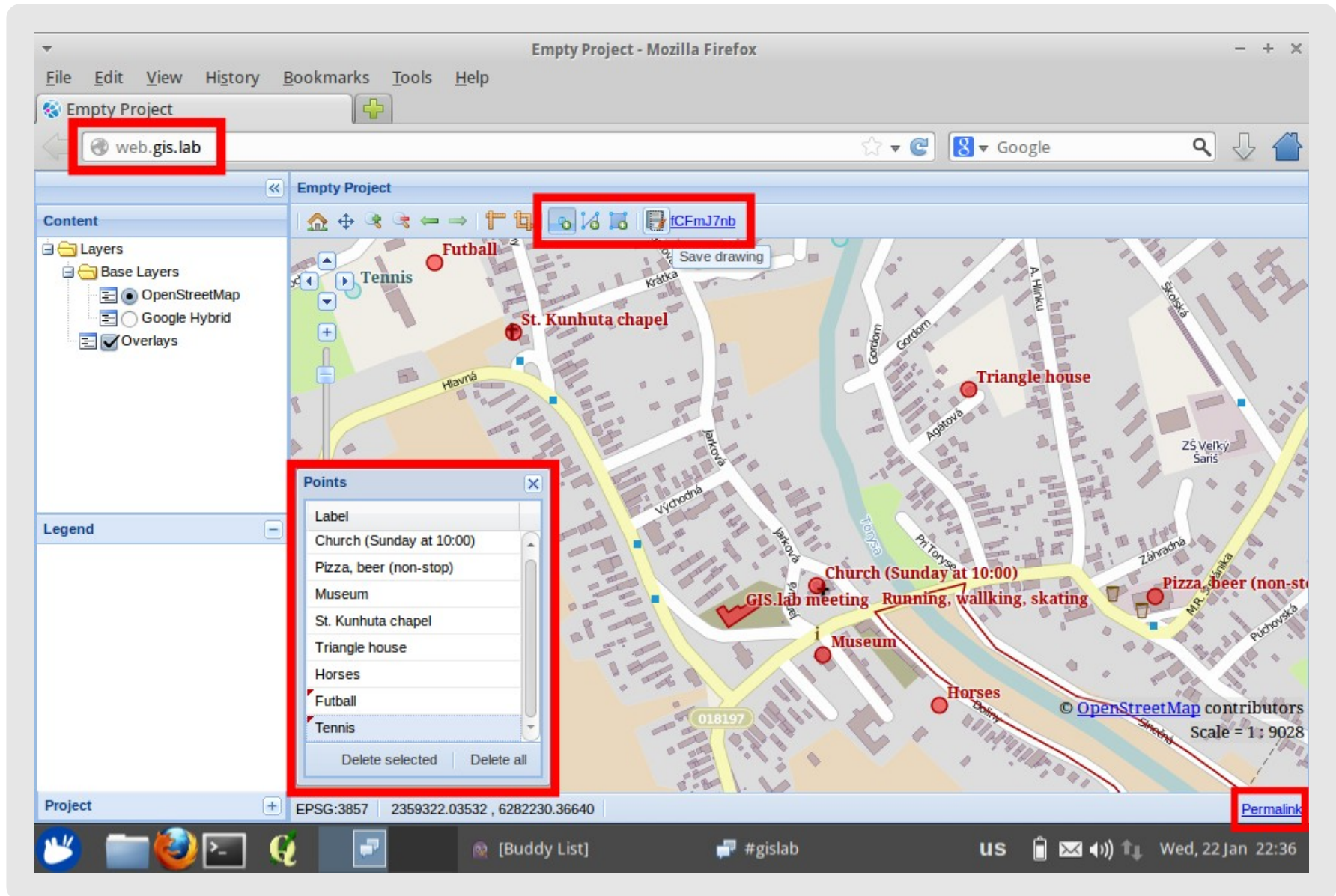


### Task

Create map of possible free time activities in neighbourhood of our local community meeting.

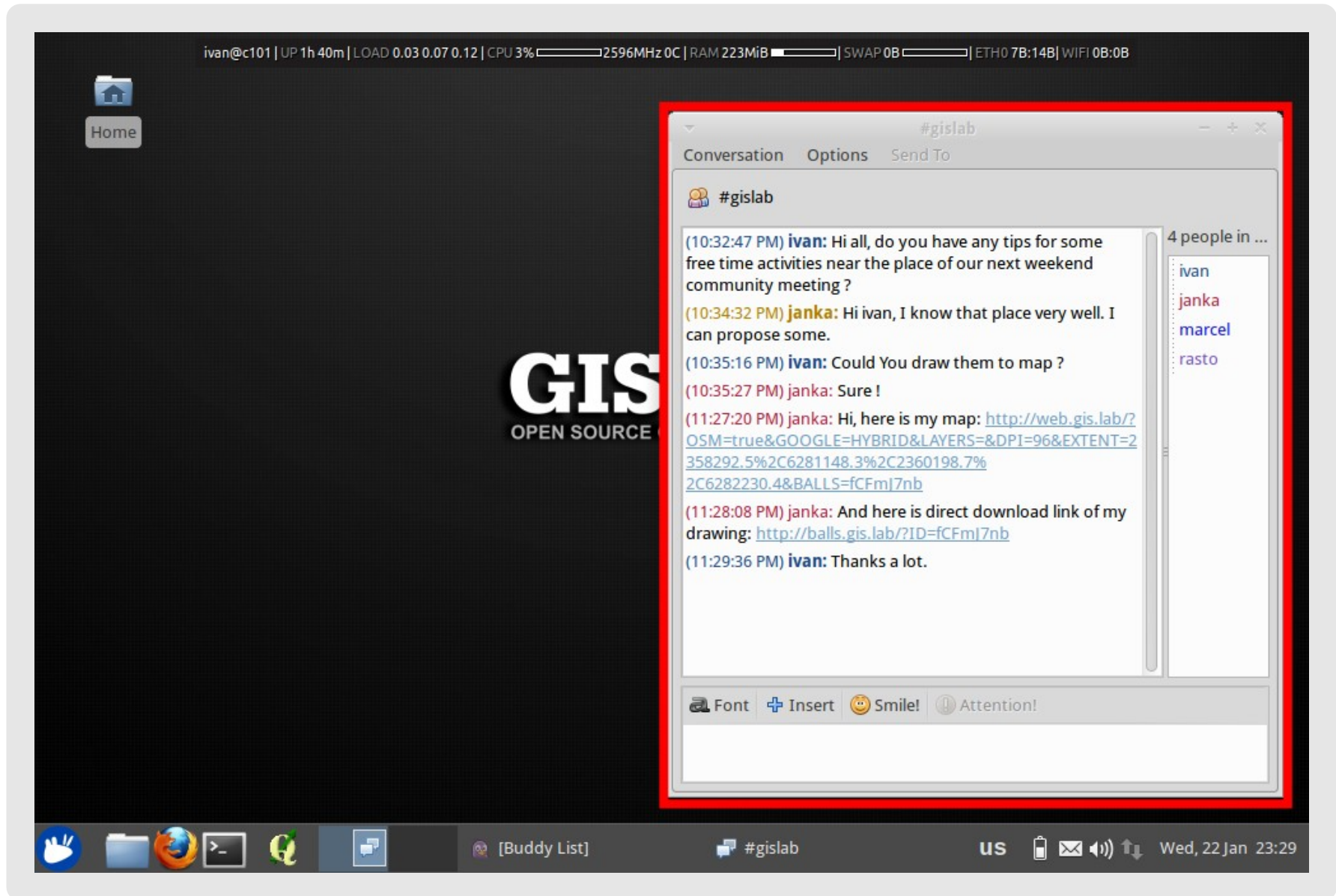


1. **Ivan:** Ask people to propose some tips of interesting places and activities near the place of our meeting using built-in chat.

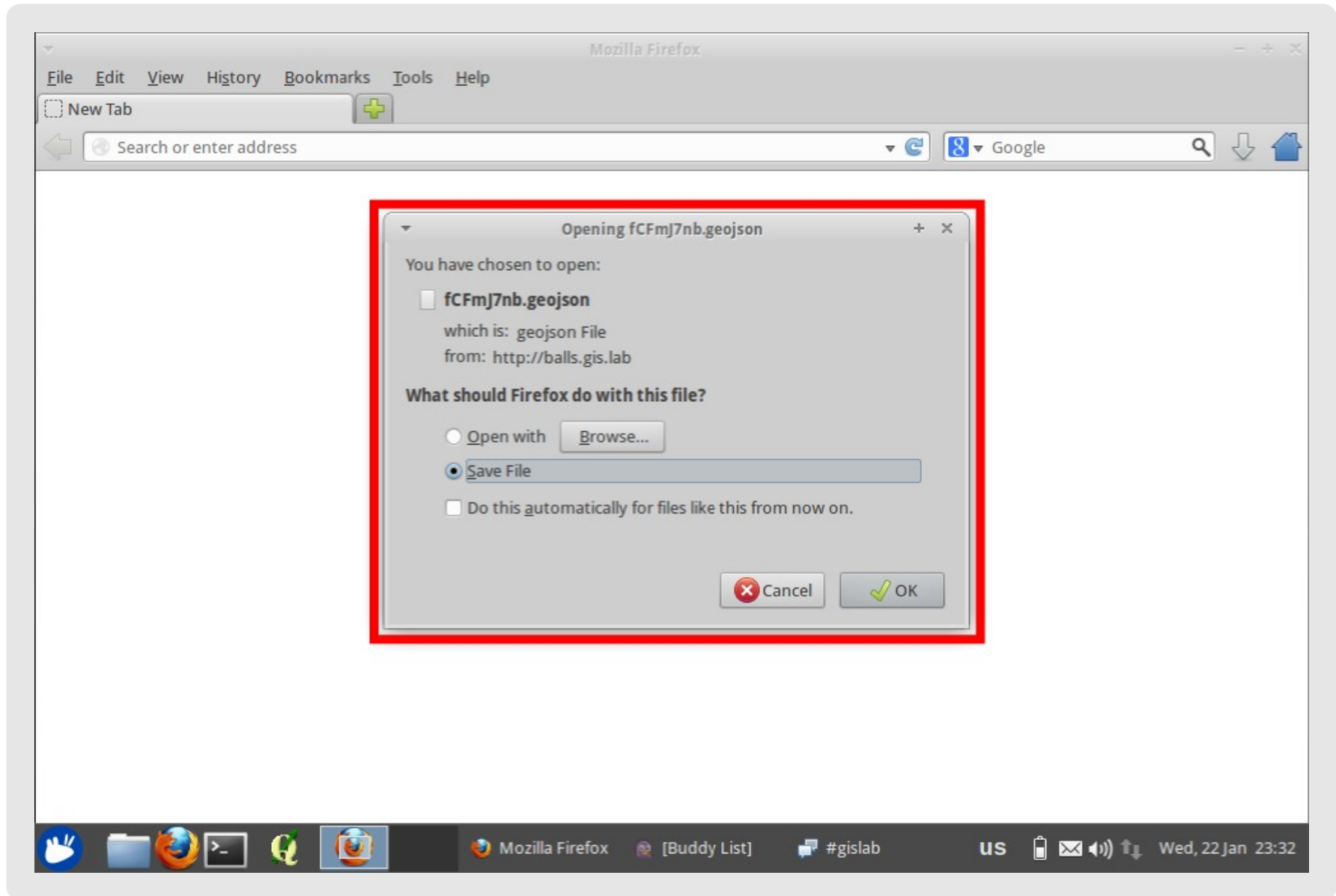


2. **Janka:** Draw map of proposals using WebGIS vector drawing tools.



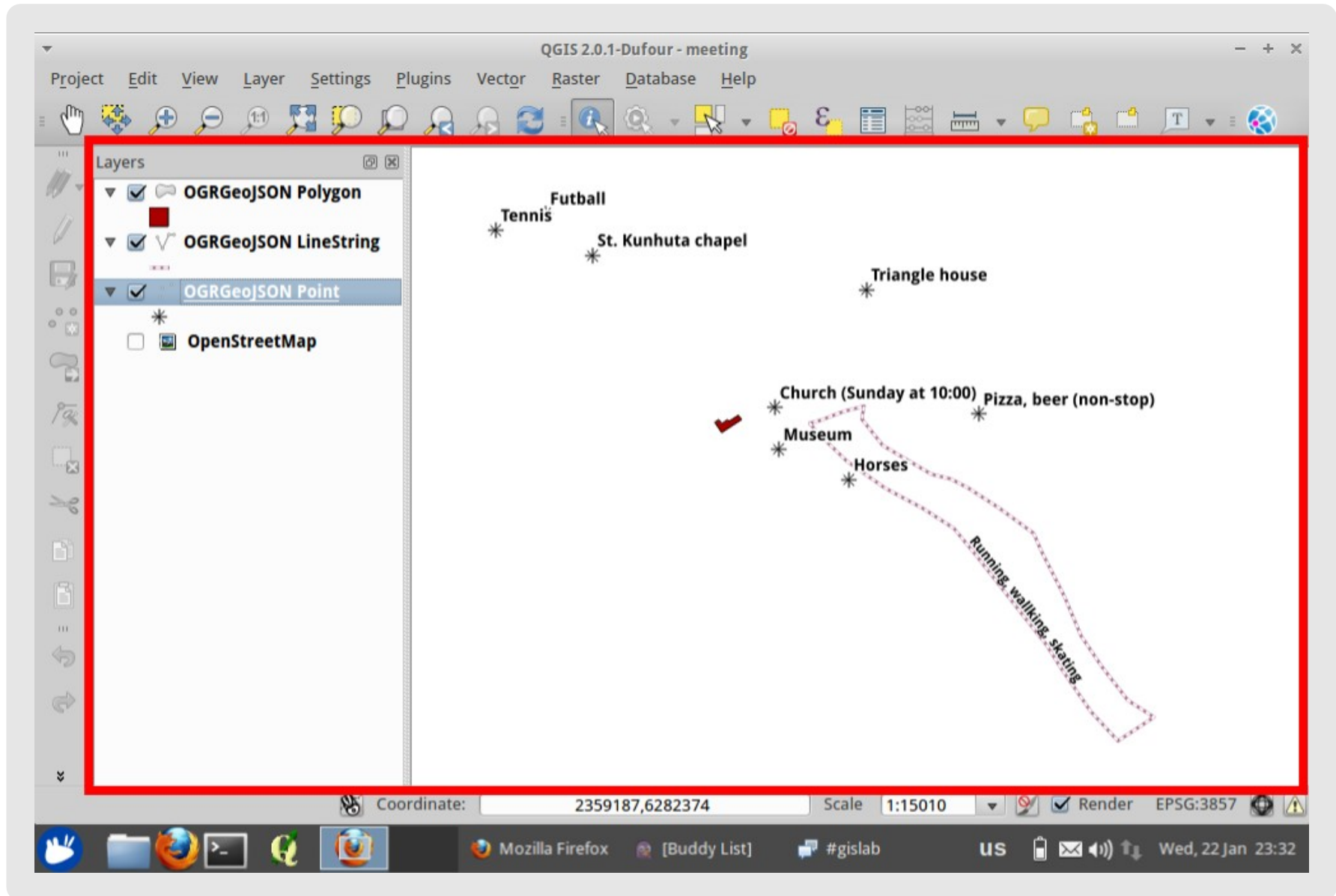


3. **Janka:** Publish map of proposals and direct link to download drawn data using chat.

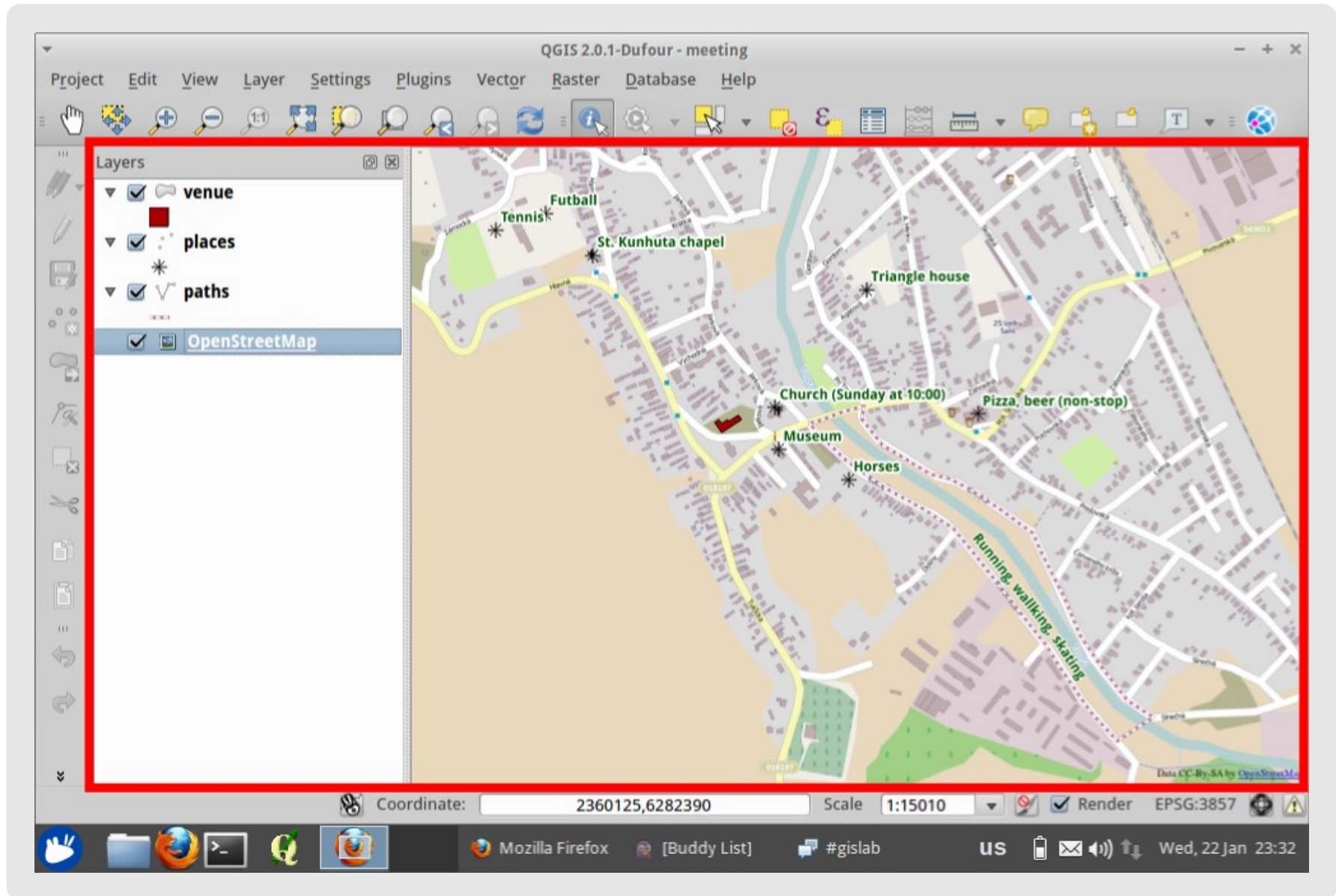


4. **Ivan:** Download data drawn by Janka.

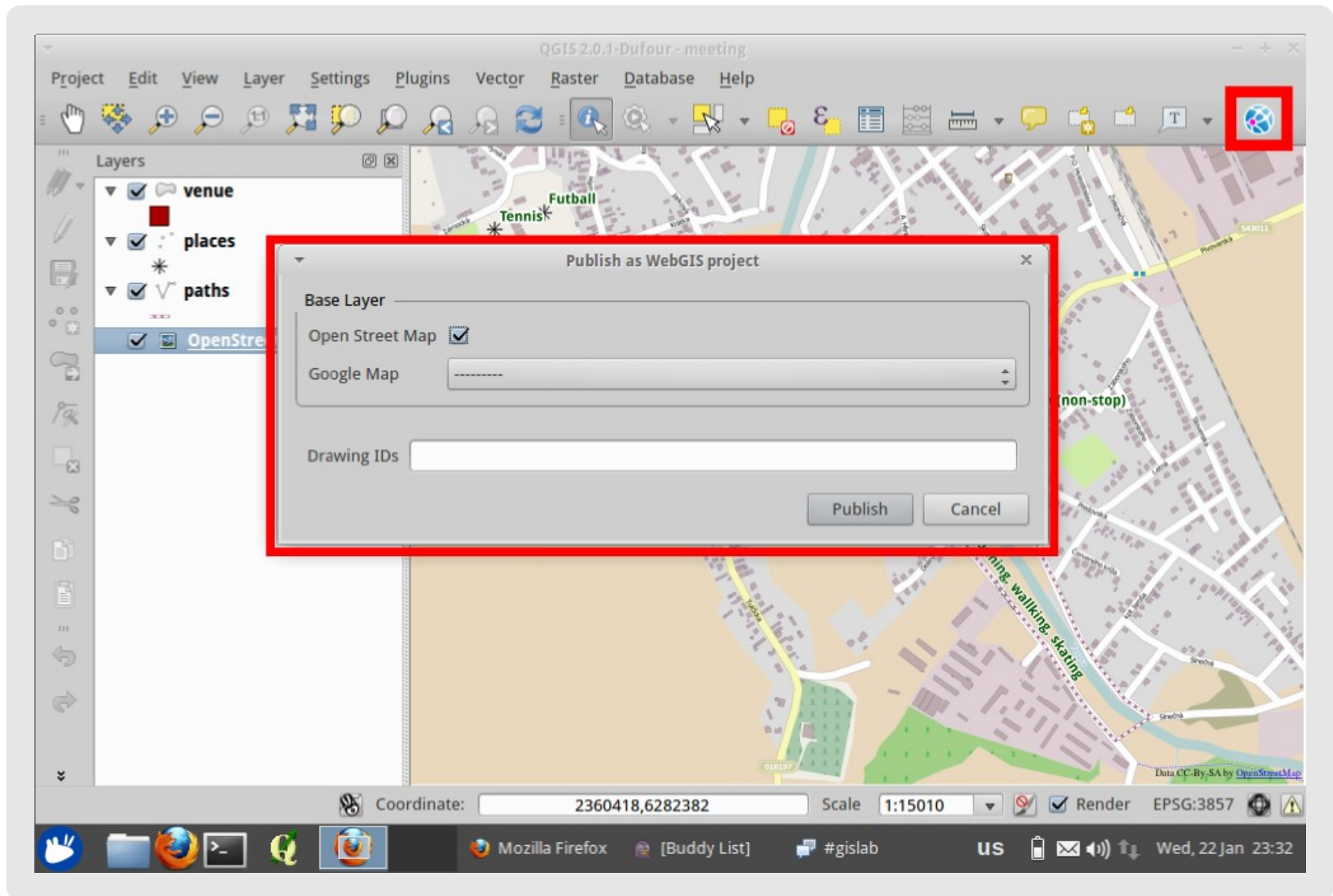




5. Ivan: Load data in new QGIS project.

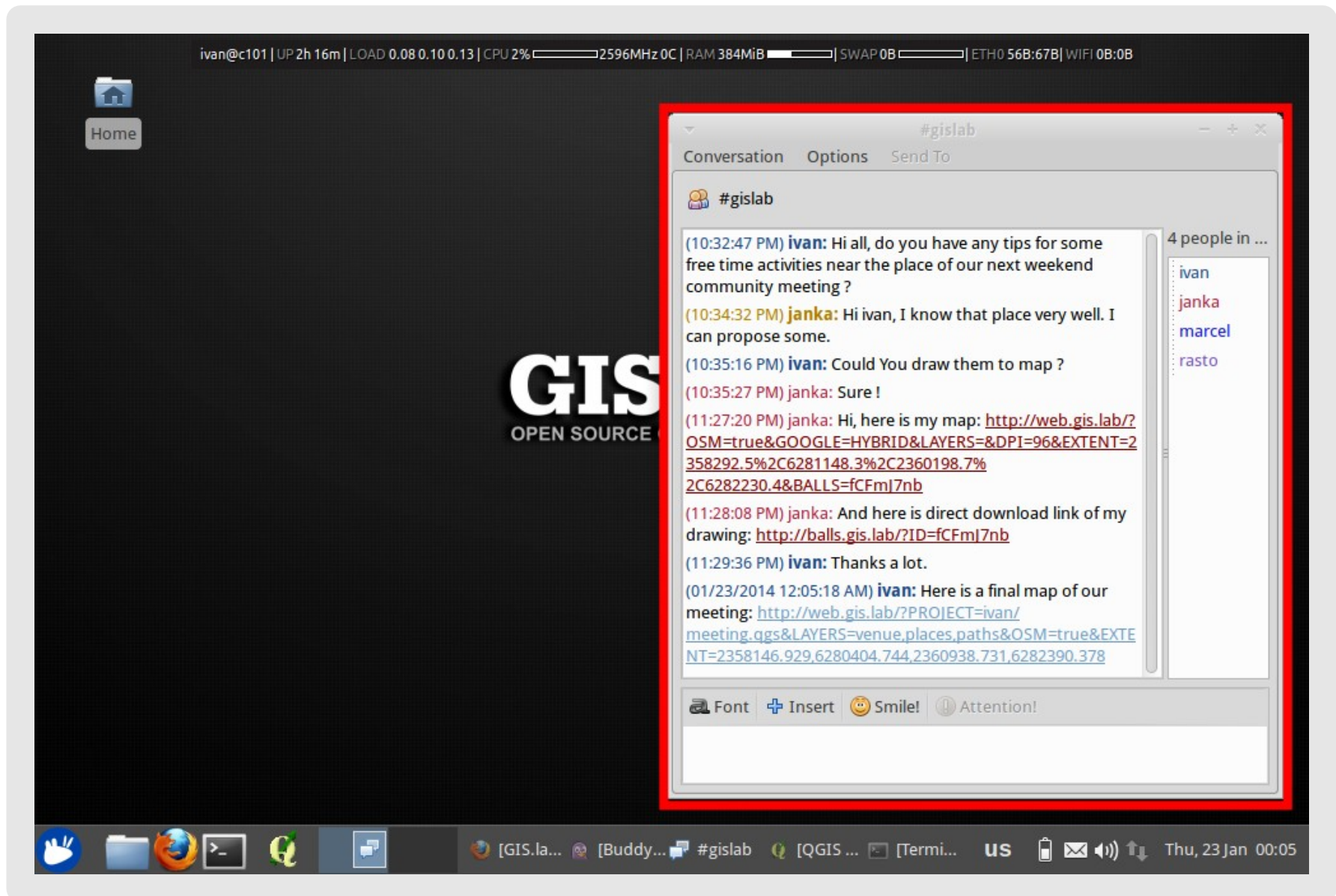


6. Ivan: Create map project from loaded data.

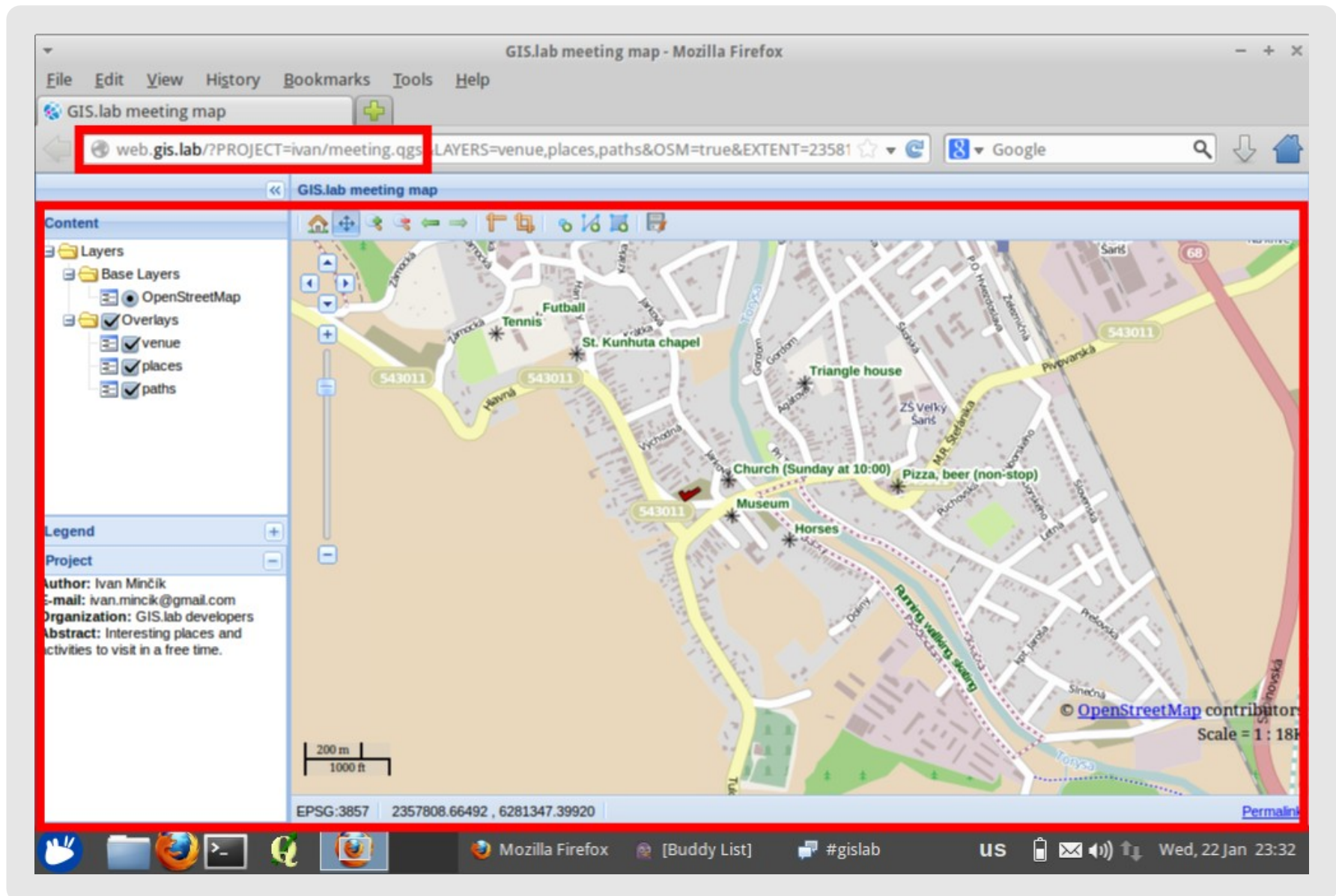


7. Ivan: Publish final map as WebGIS project.





8. **Ivan:** Announce our new WebGIS project using chat.



9. Ivan: Final map.

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- Development state: in active development
- Authors: Ivan Minčík, Marcel Dancák
- Sponsor: GISTA s.r.o. [www.gista.sk](http://www.gista.sk)
- Partner: University of Prešov in Prešov, [www.unipo.sk](http://www.unipo.sk)
- Credits: developers of Linux, Debian, Ubuntu, Xubuntu, VirtualBox, Vagrant, LTSP, PostgreSQL, PostGIS, PgAdmin, SpatiaLite,
- QGIS, GRASS GIS and tons of other Open Source software
- Home page: **<http://imincik.github.io/gis-lab>**
- License of this presentation: CC BY-SA



# **GIS.lab**

## **Technologies**



# **Server technologies**

## **Host machine requirements**

- Operating System - Linux or Windows or Mac OS X
- Virtualization software - VirtualBox or VMWare or LXC containers
- Provisioning software - Vagrant

## **Software and Services**

- Boot from LAN tool chain - TFTP, DHCP, LTSP
- DNS - BIND
- File sharing - NFS
- Database - PostgreSQL/Postgis
- Mapping server and web GIS - Apache, QGIS Mapserver, GIS.lab WebGIS
- Chatting server - IRC



## **Client technologies**

### **Host machine requirements**

- Nothing  
or
- Operating System Linux or Windows or Mac OS X

### **Software and Services**

- **Office suite** - LibreOffice, Firefox, Thunderbird, Pidgin, GIMP, VLC ...
- **GIS software** - QGIS, GRASS, Spatialite, PgAdmin
- **Developer tools** - Git, QtCreator, Python, GIS libraries

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