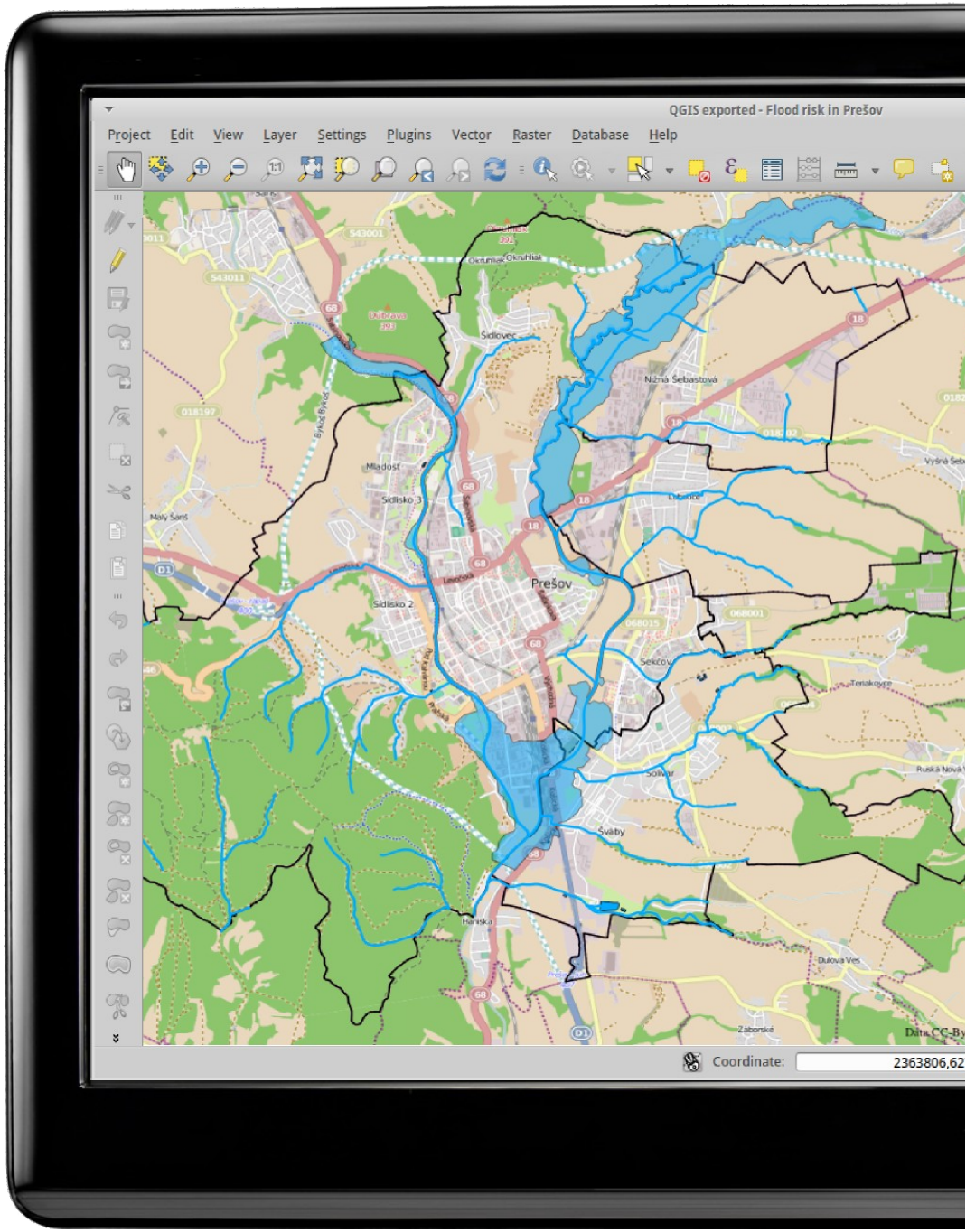
GIS.lab

OPEN SOURCE GIS LABORATORY



Mgr. Ivan **Minčík**

Mgr. Miloslav **Michalko**, PhD.

Mgr. Jana **Kormaníková**

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
- Backup and recovery

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

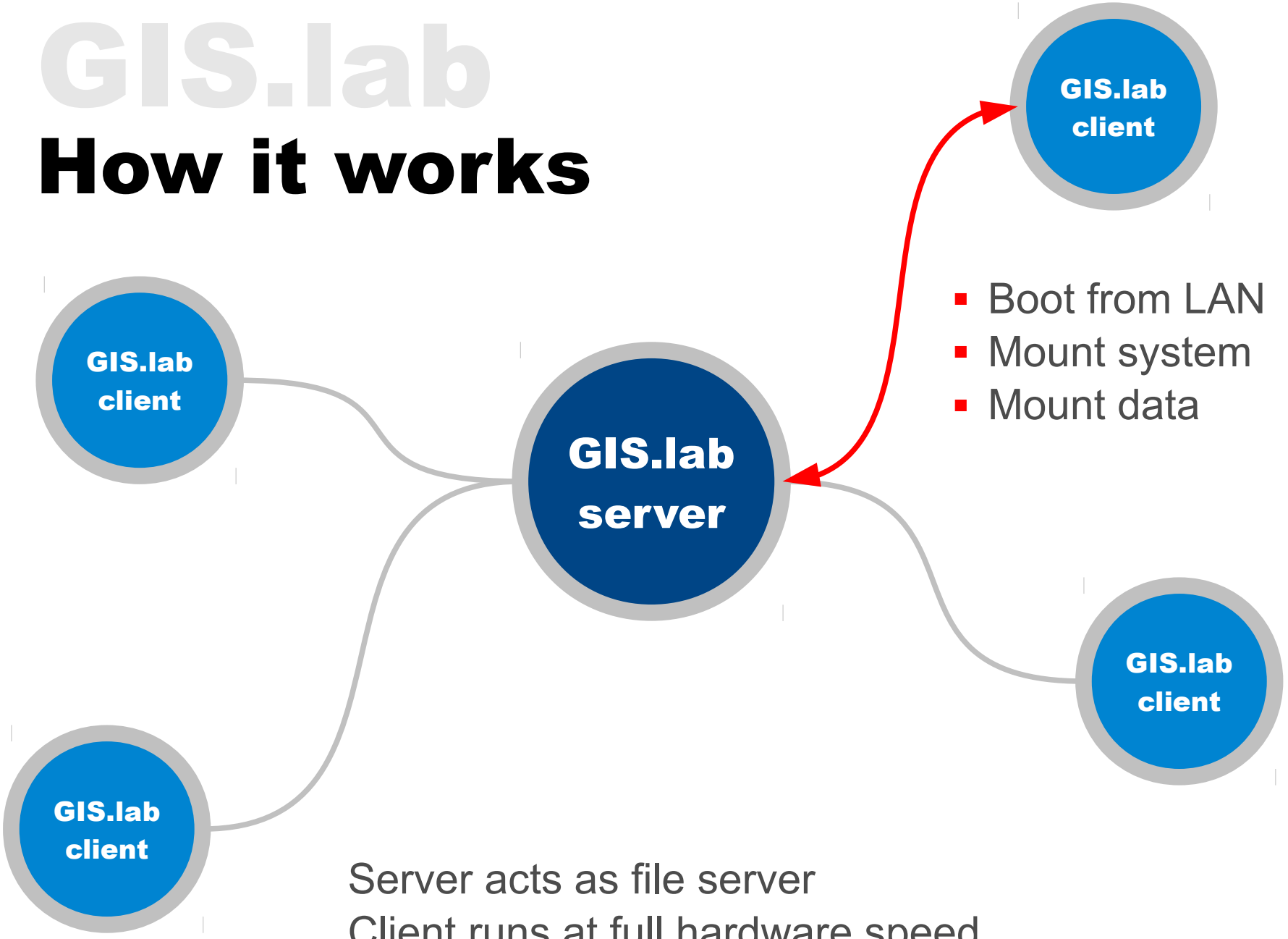
- Plug-and-play

0 minutes

450 EUR

GIS.lab
How it works

How it works

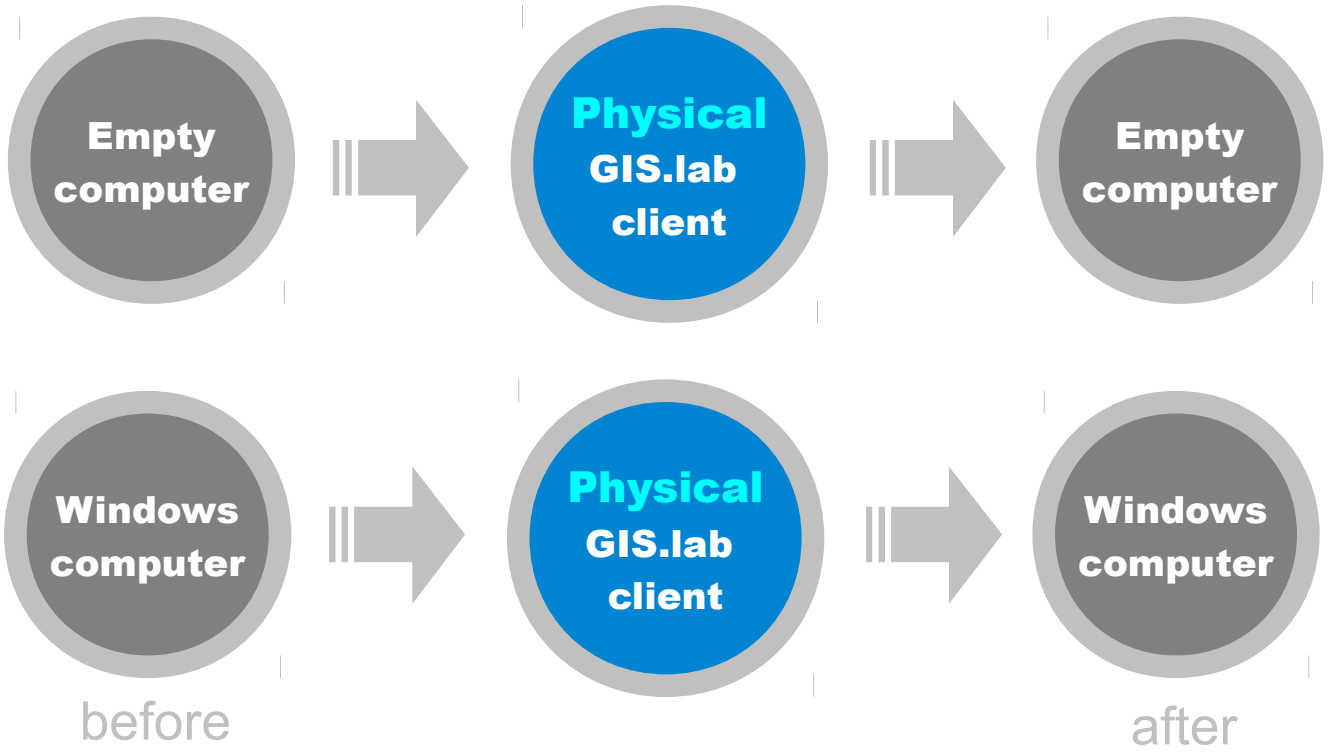


- Boot from LAN
- Mount system
- Mount data

Server acts as file server
Client runs at full hardware speed

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)

GIS.lab

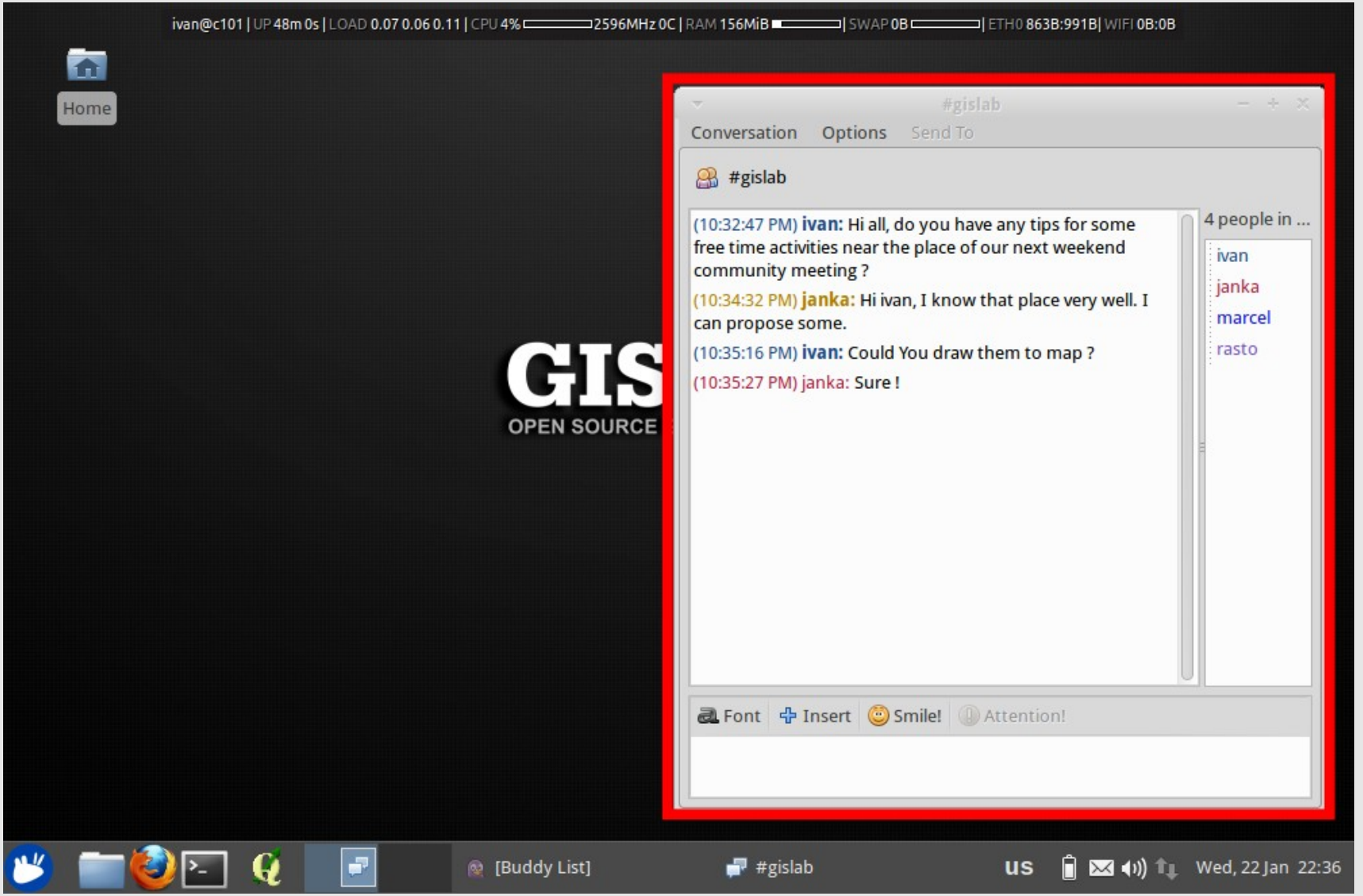
Use case

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

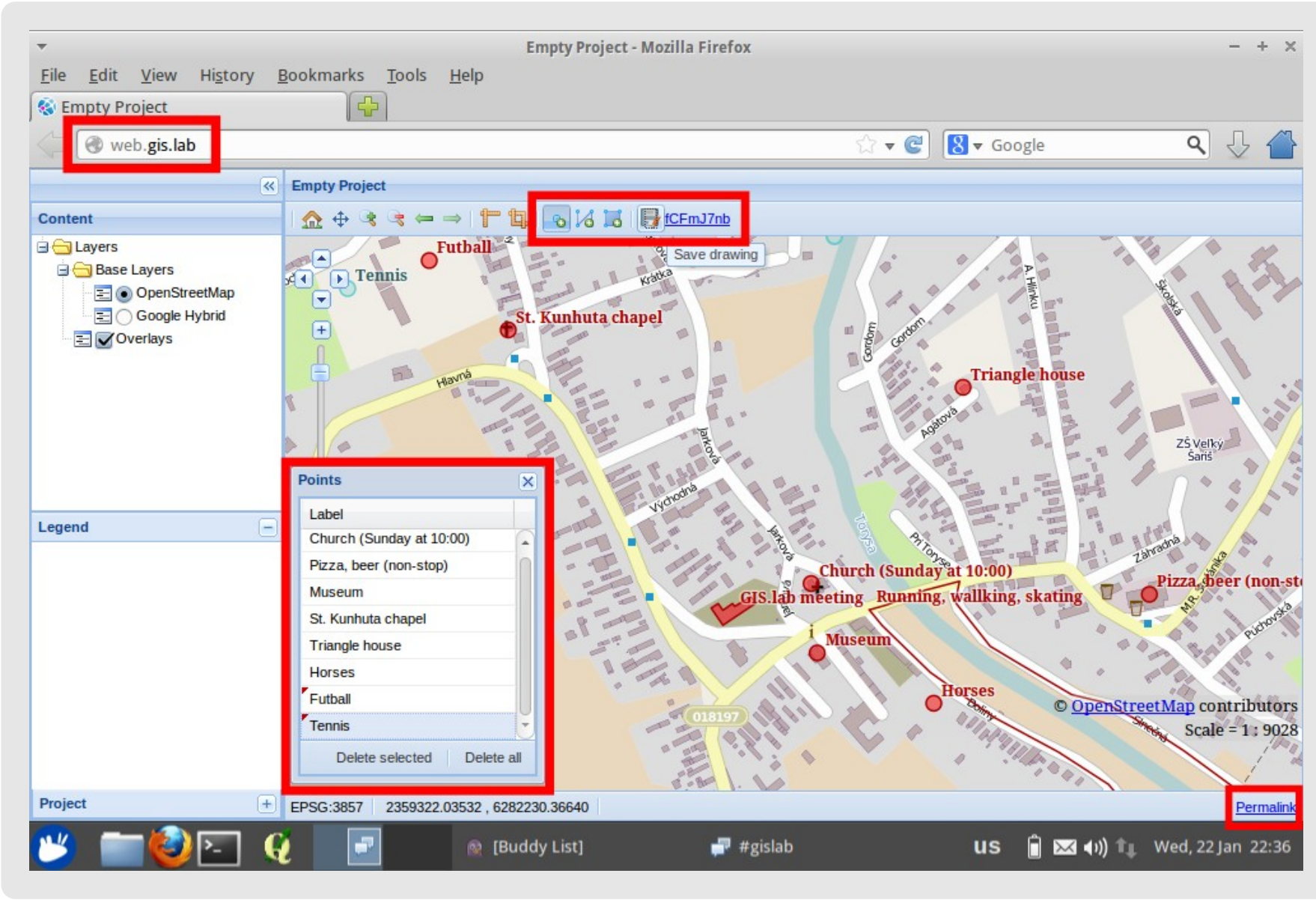
GIS.lab
Example work flow

Task

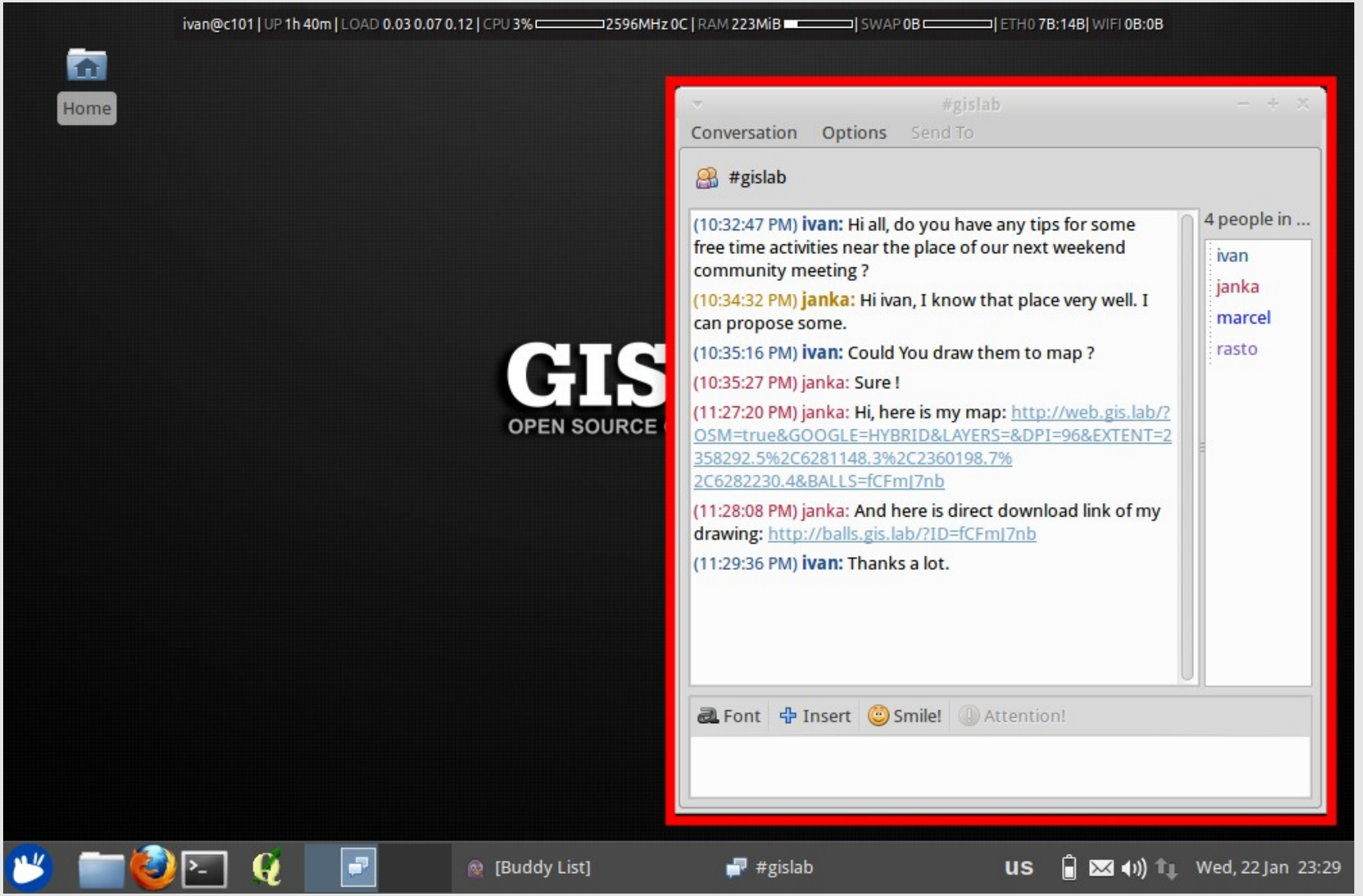
Create map of possible free time activities in neighbourhood of our local community meeting.



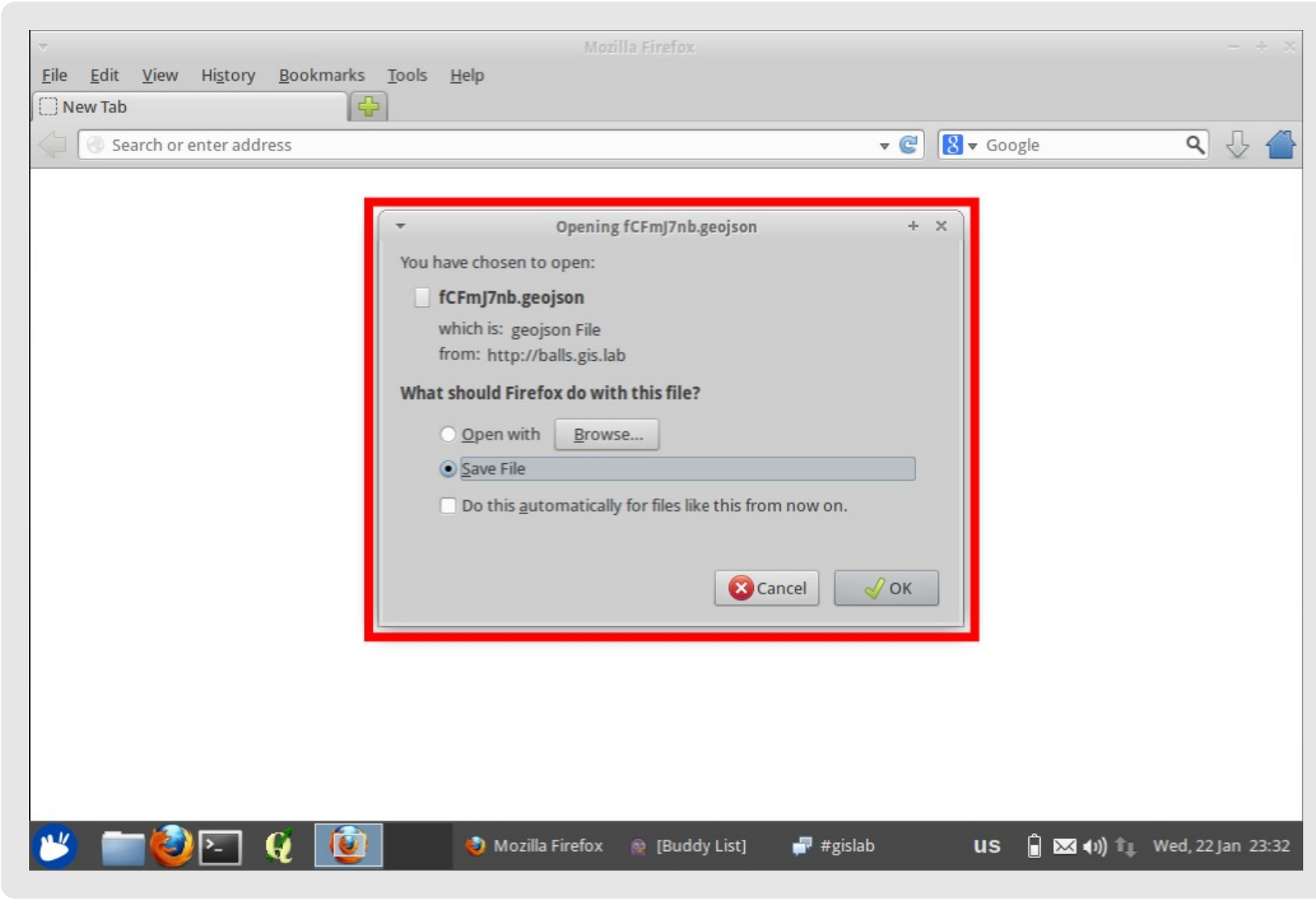
1. **Ivan**: Ask people to propose some tips of interesting places and activities near the place of our meeting using built-in chat.



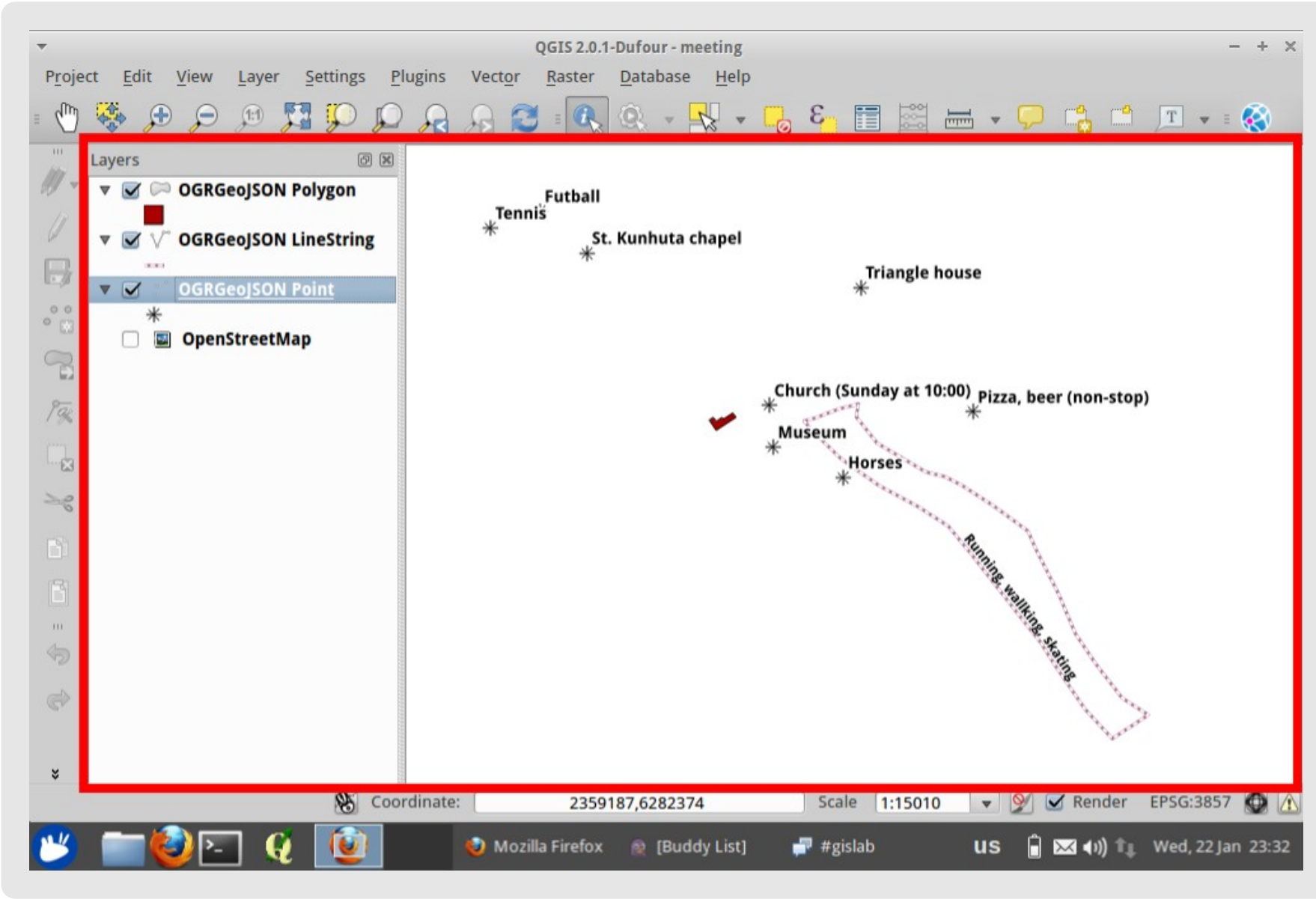
2. **Janka**: Draw map of proposals using WebGIS vector drawing tools.



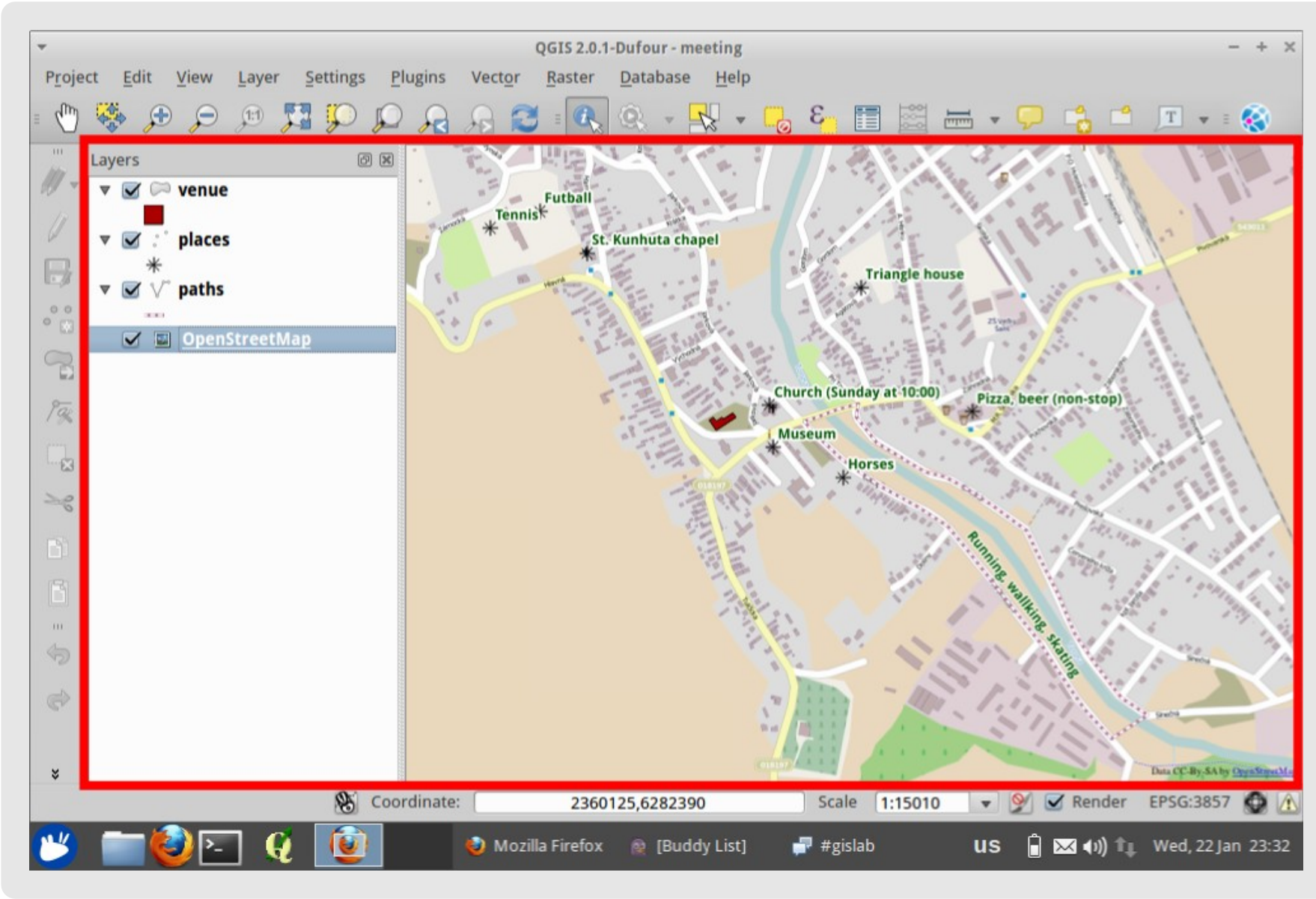
3. **Janka**: Publish map of proposals and direct link to download drawn data using chat.



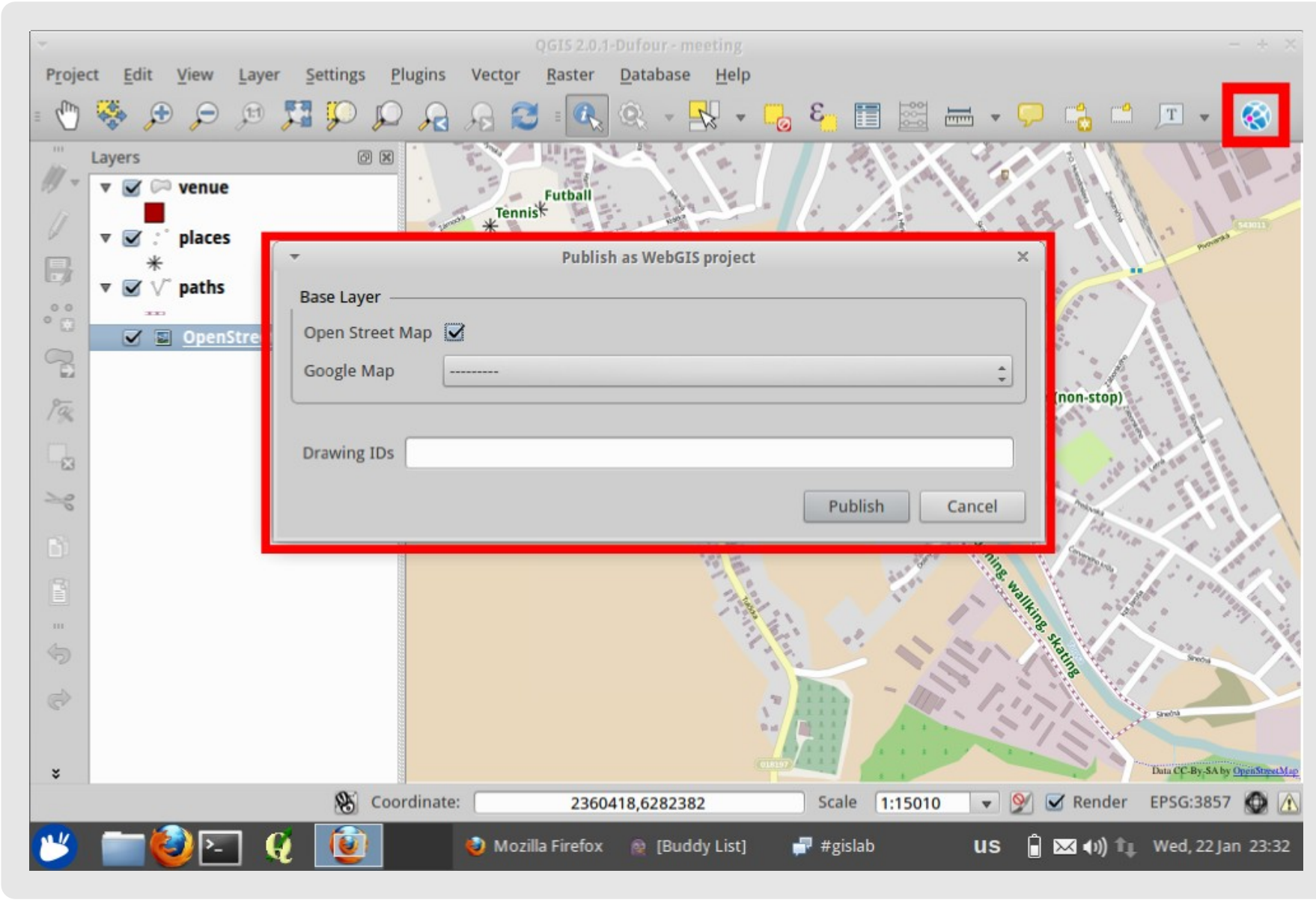
4. **Ivan**: Download data drawn by Janka.



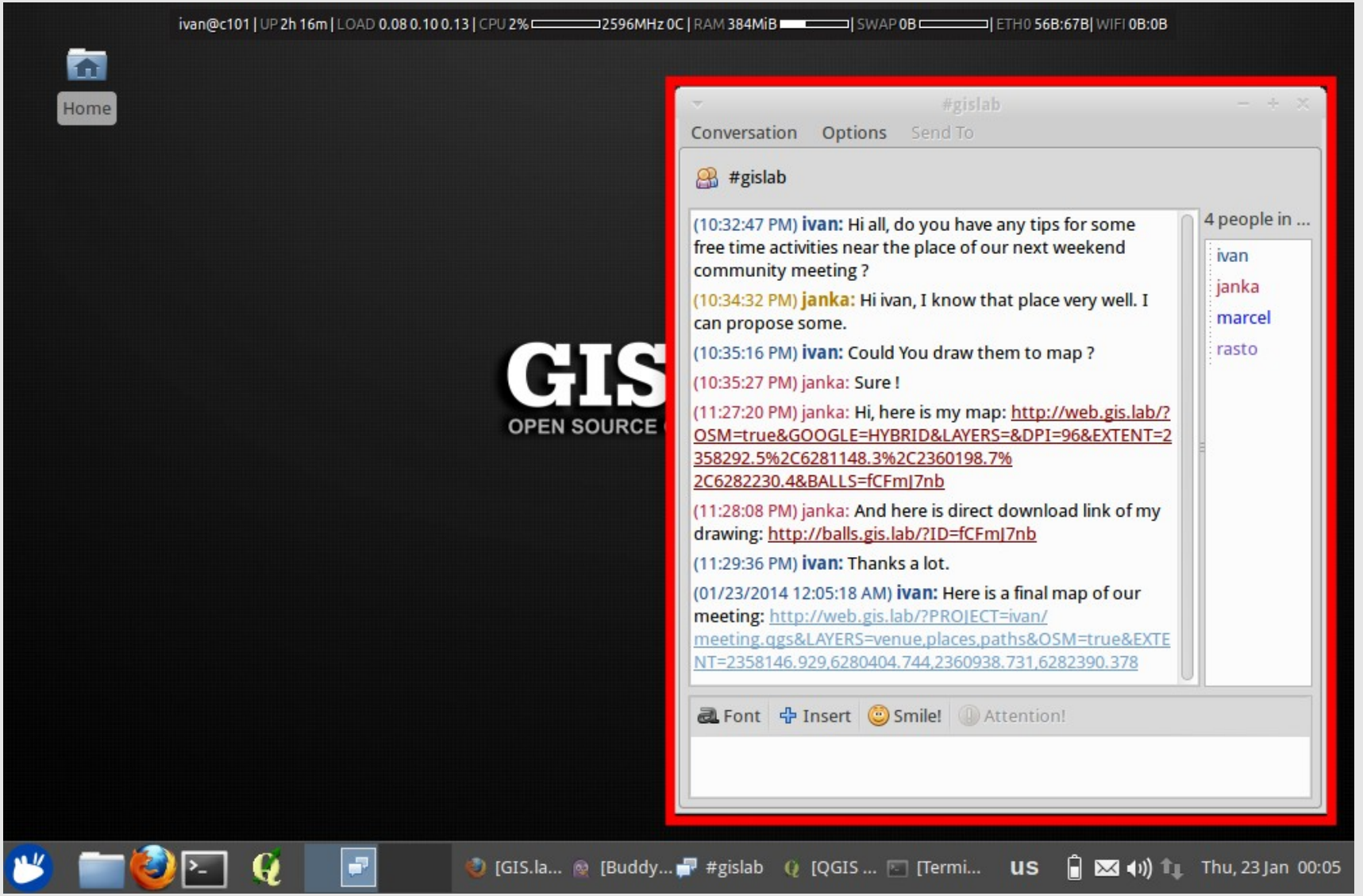
5. **Ivan**: Load data in new QGIS project.



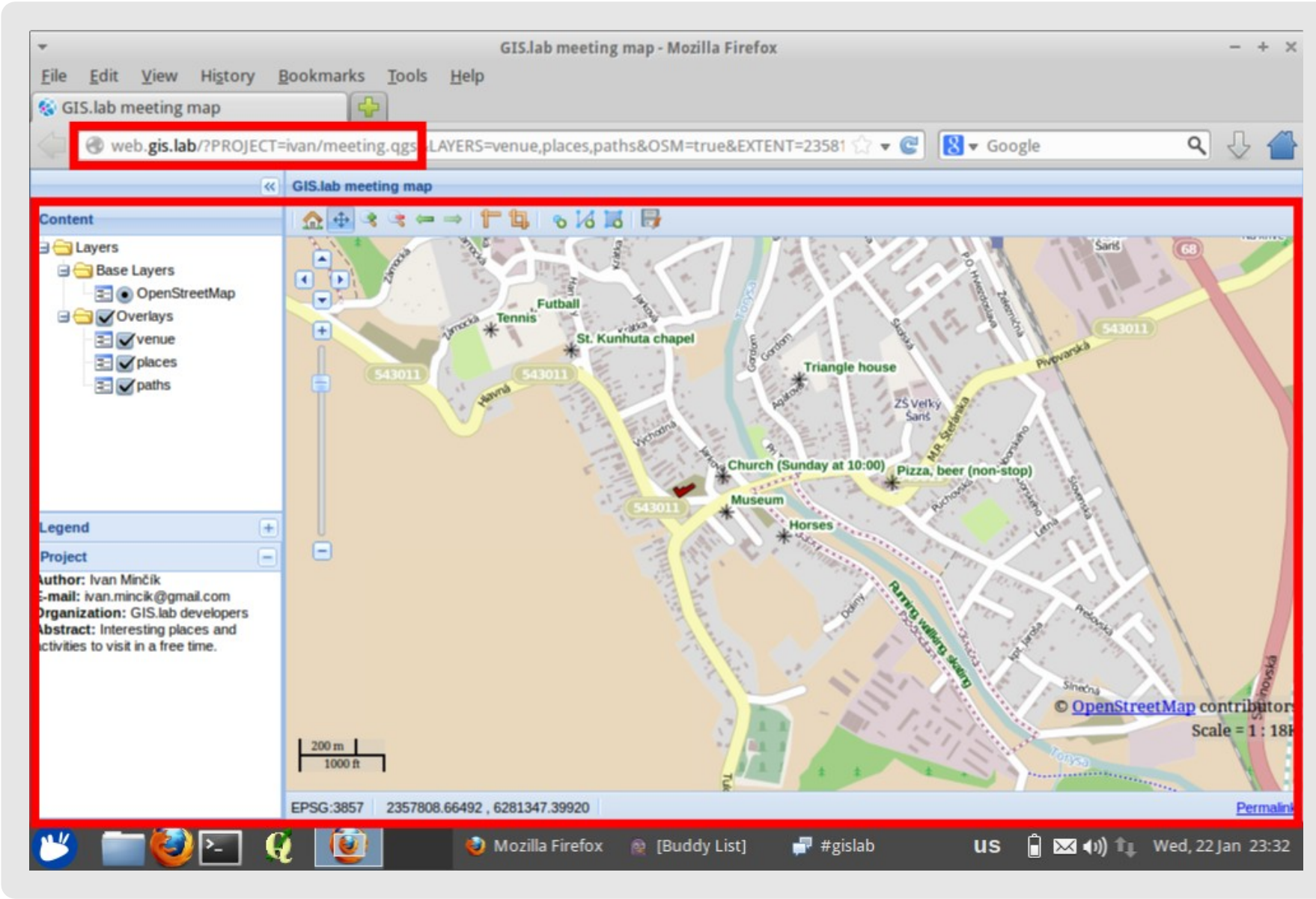
6. **Ivan**: Create map project from loaded data.



7. **Ivan**: Publish final map as WebGIS project.



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



9. **Ivan**: Final map.

GIS.lab

OPEN SOURCE GIS LABORATORY

- Development state: in active development

- Authors: Ivan Minčík, Marcel Dancák
- Sponsor: GISTA s.r.o. www.gista.sk
- Partner: University of Prešov in Prešov, 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

Gista
Open technologies

GIS.lab
Technologies

GIS.lab

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

GIS.lab

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

GIS.lab

OPEN SOURCE GIS LABORATORY