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OPEN SOURCE GIS LABORATORY

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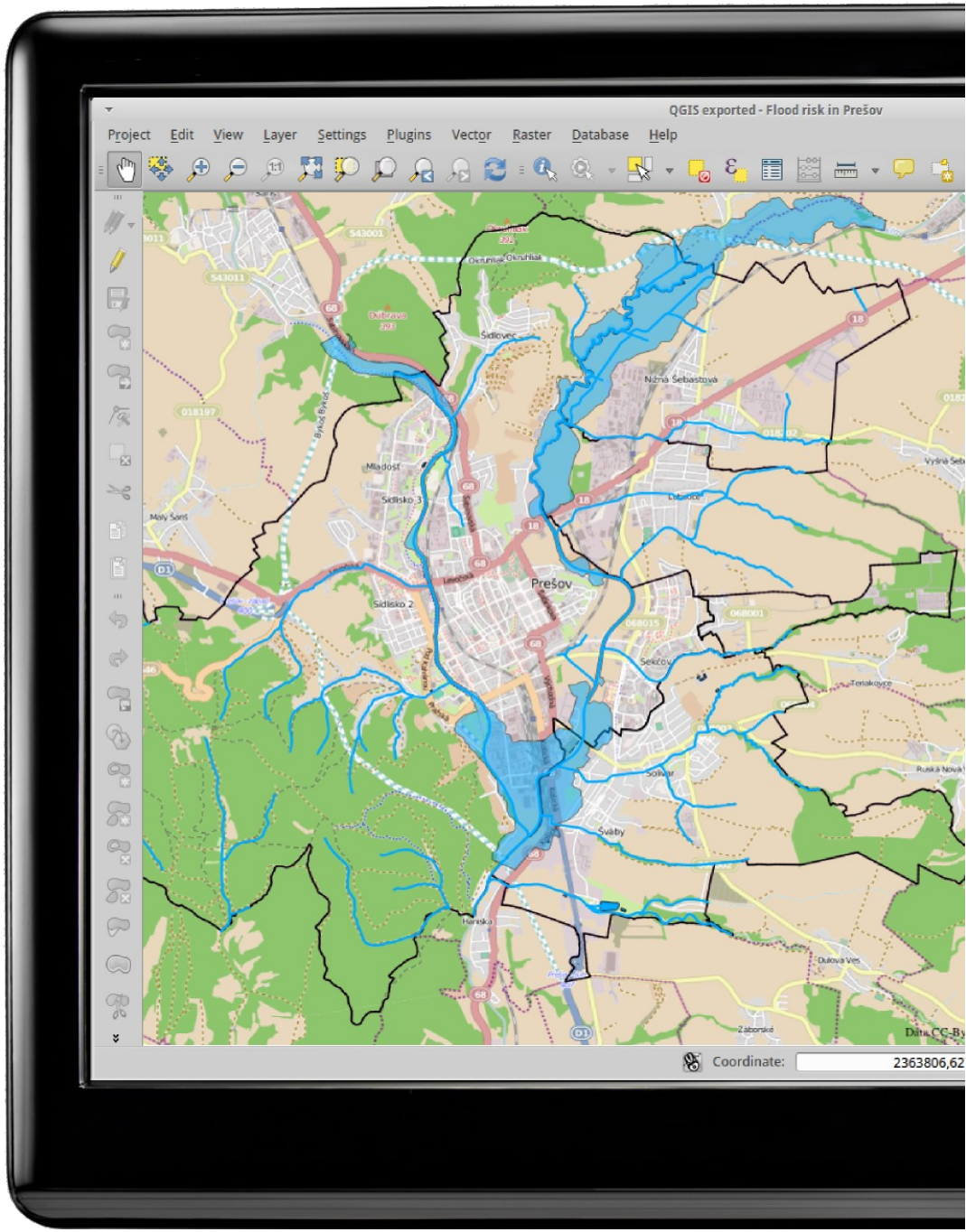

What does it takes
to build a small GIS office?

Conditions

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

What does it takes
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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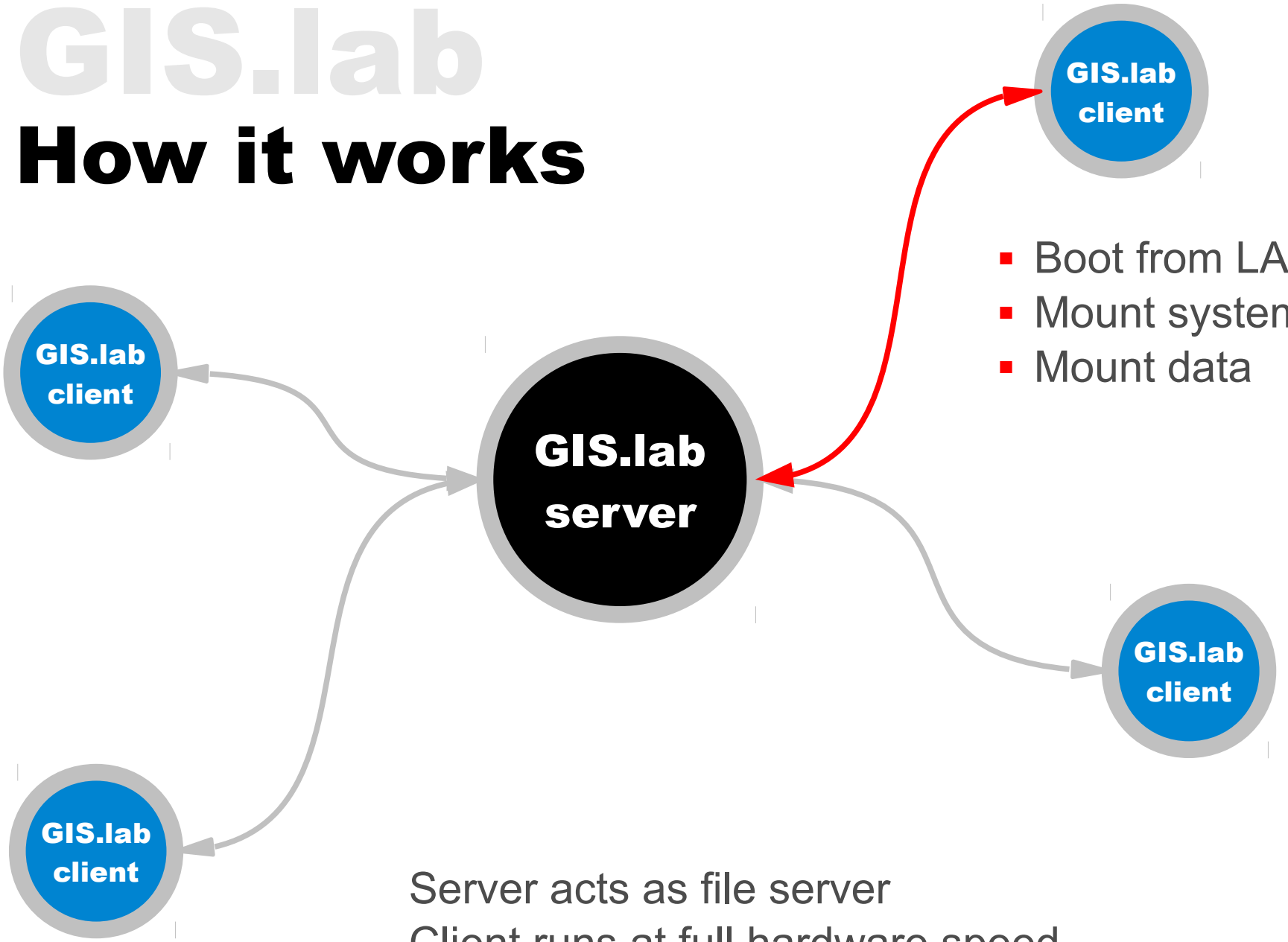
How it works



- Boot from LAN
- Mount system
- Mount data

Server acts as file server
Client runs at full hardware speed

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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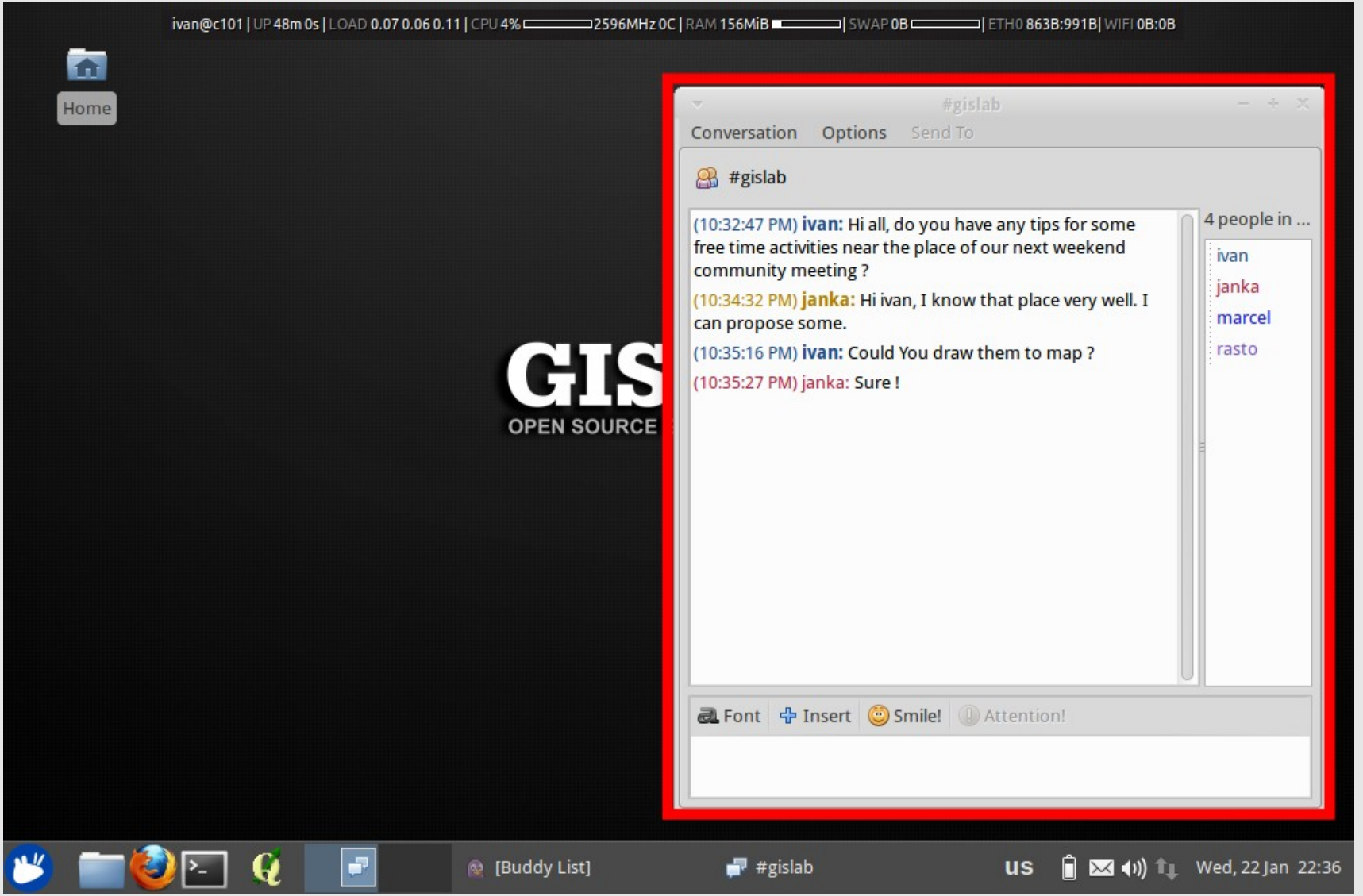
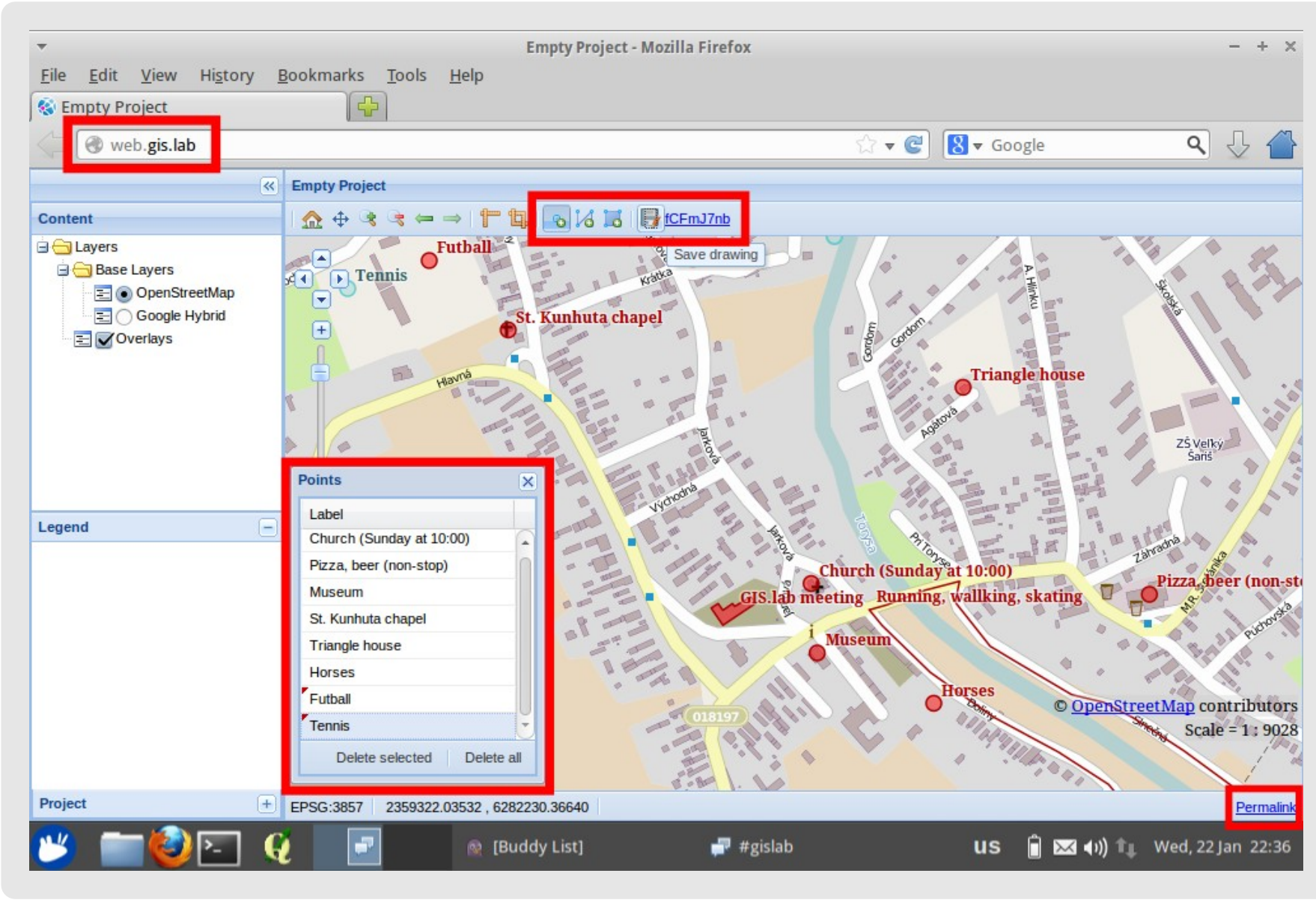
Example work flow

Task

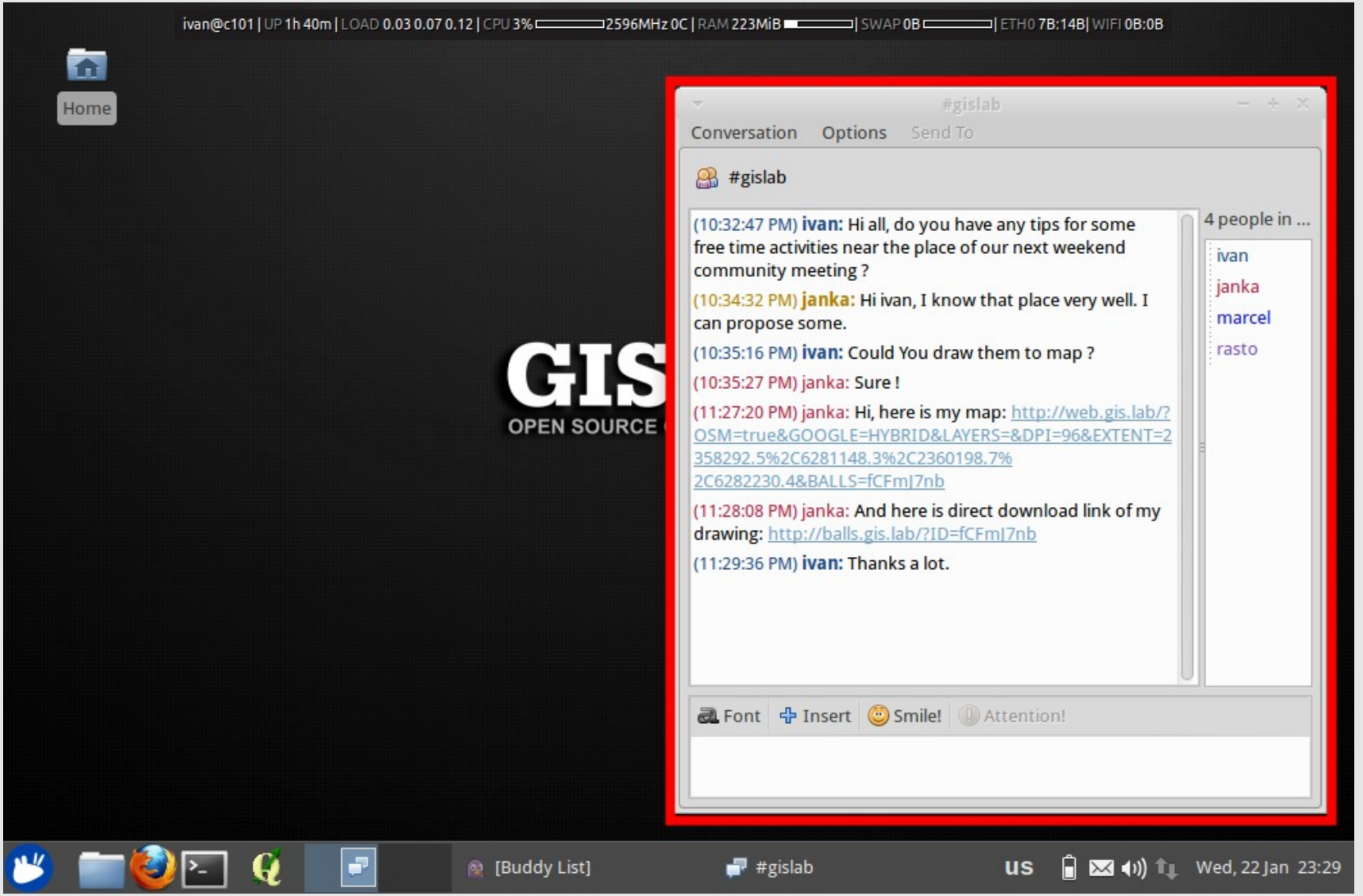
Create map of possible free time activities in neighbourhood of our local community Meeting.



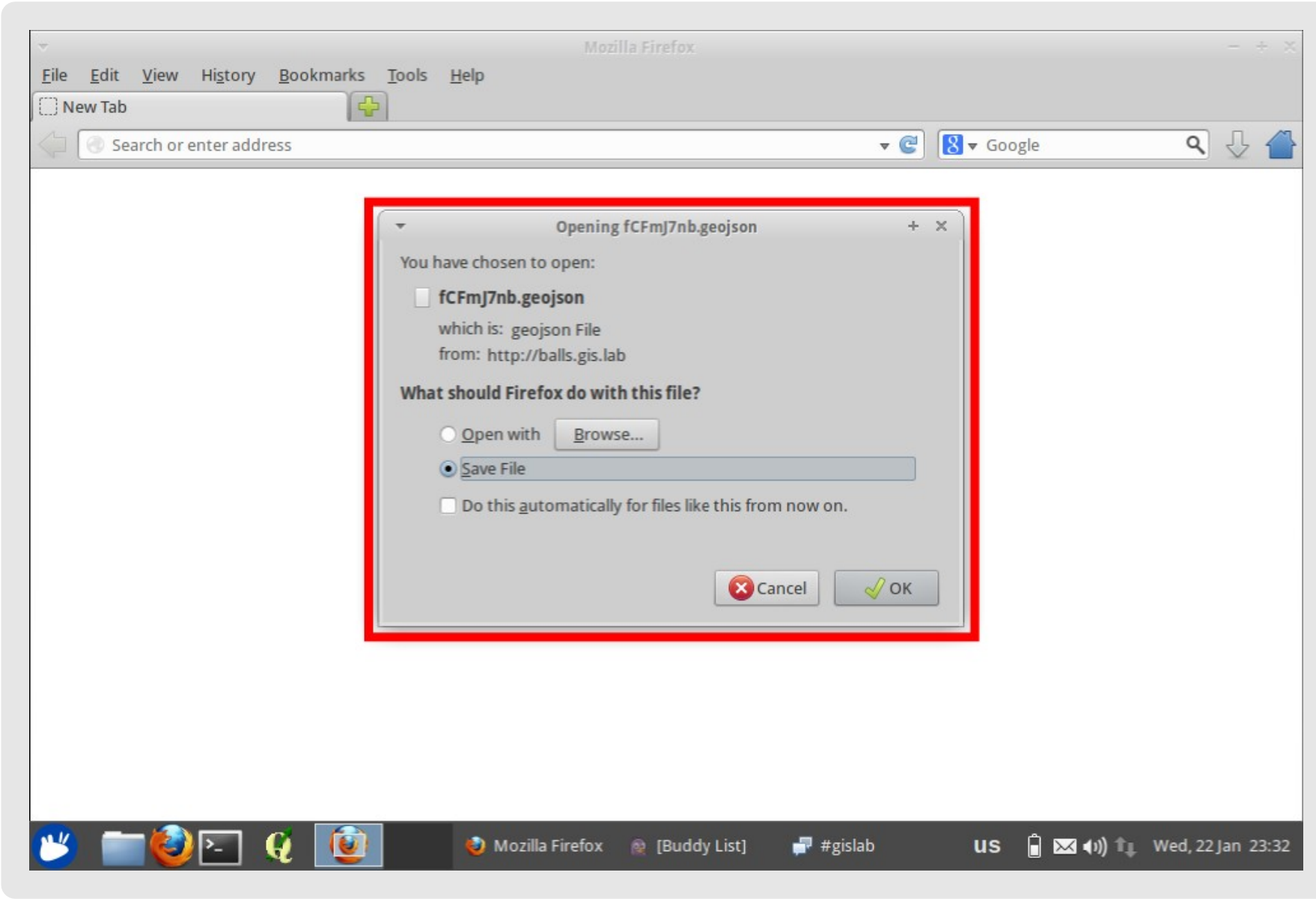
1. **Ivan**: Ask people to propose some tips of interesting places and activities near the place of our meeting using built-in chat.



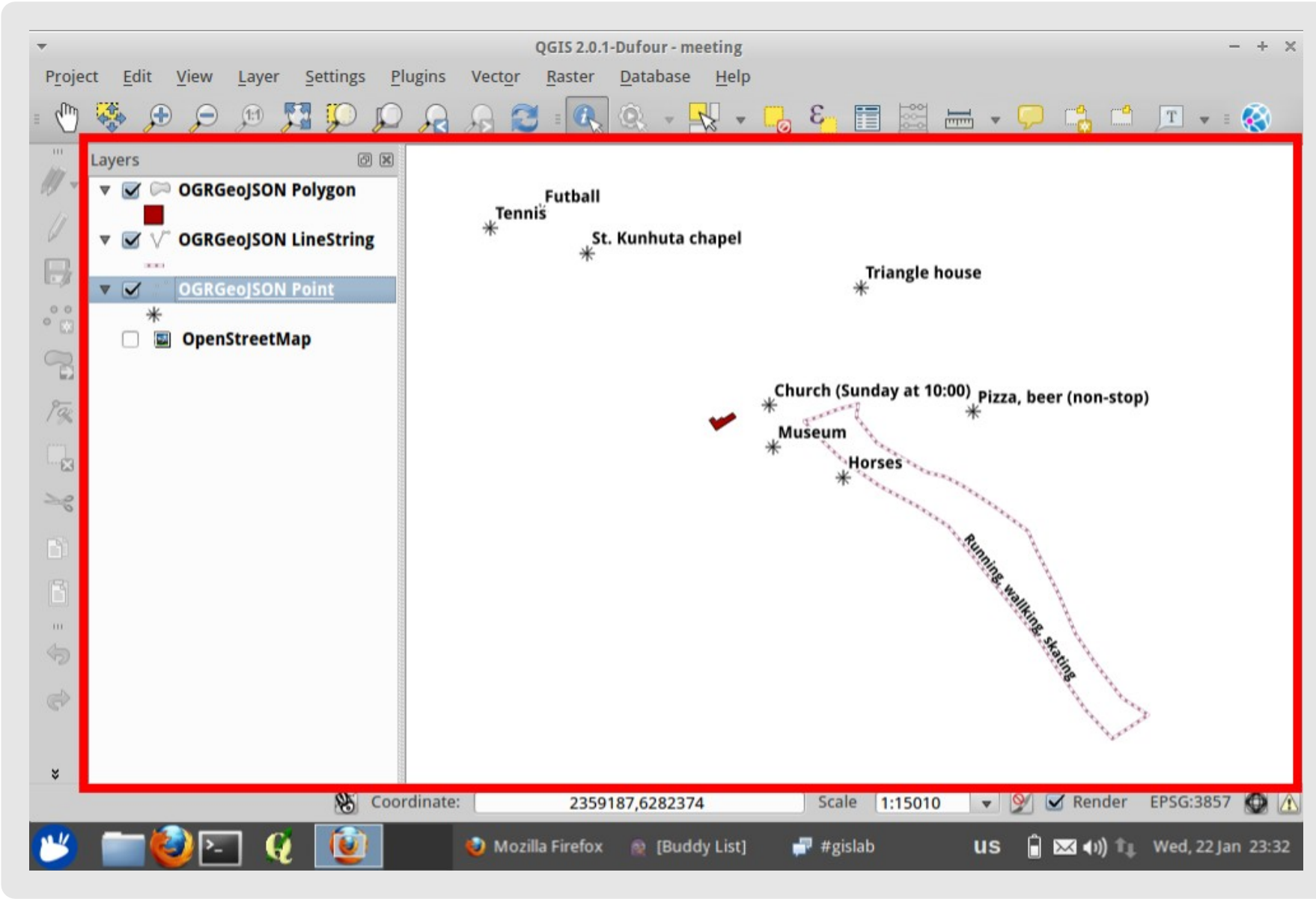
2. **Janka**: Draw map of proposals using WebGIS vector drawing tools.



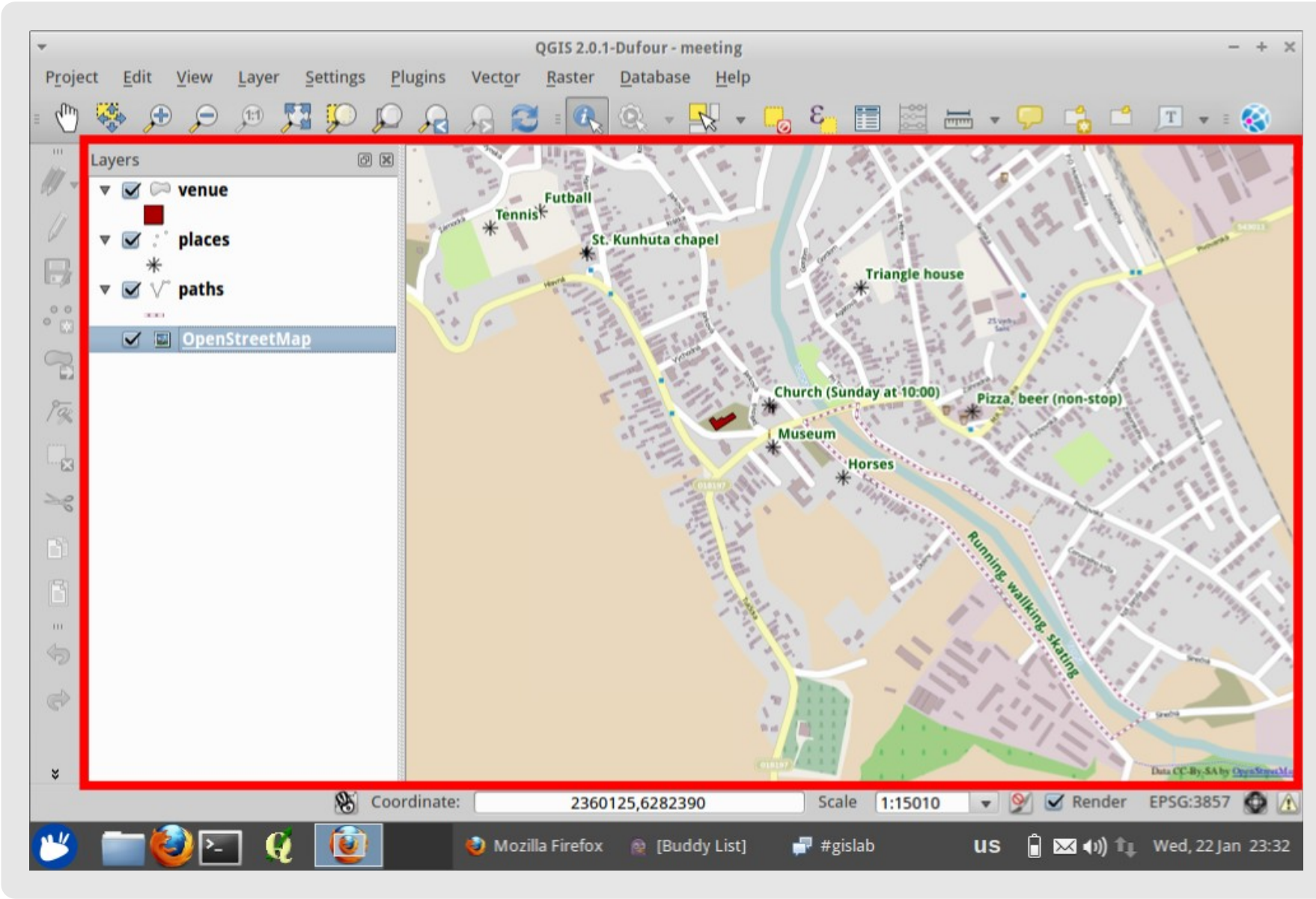
3. **Janka**: Publish map of proposals and direct link to download drawn data using chat.



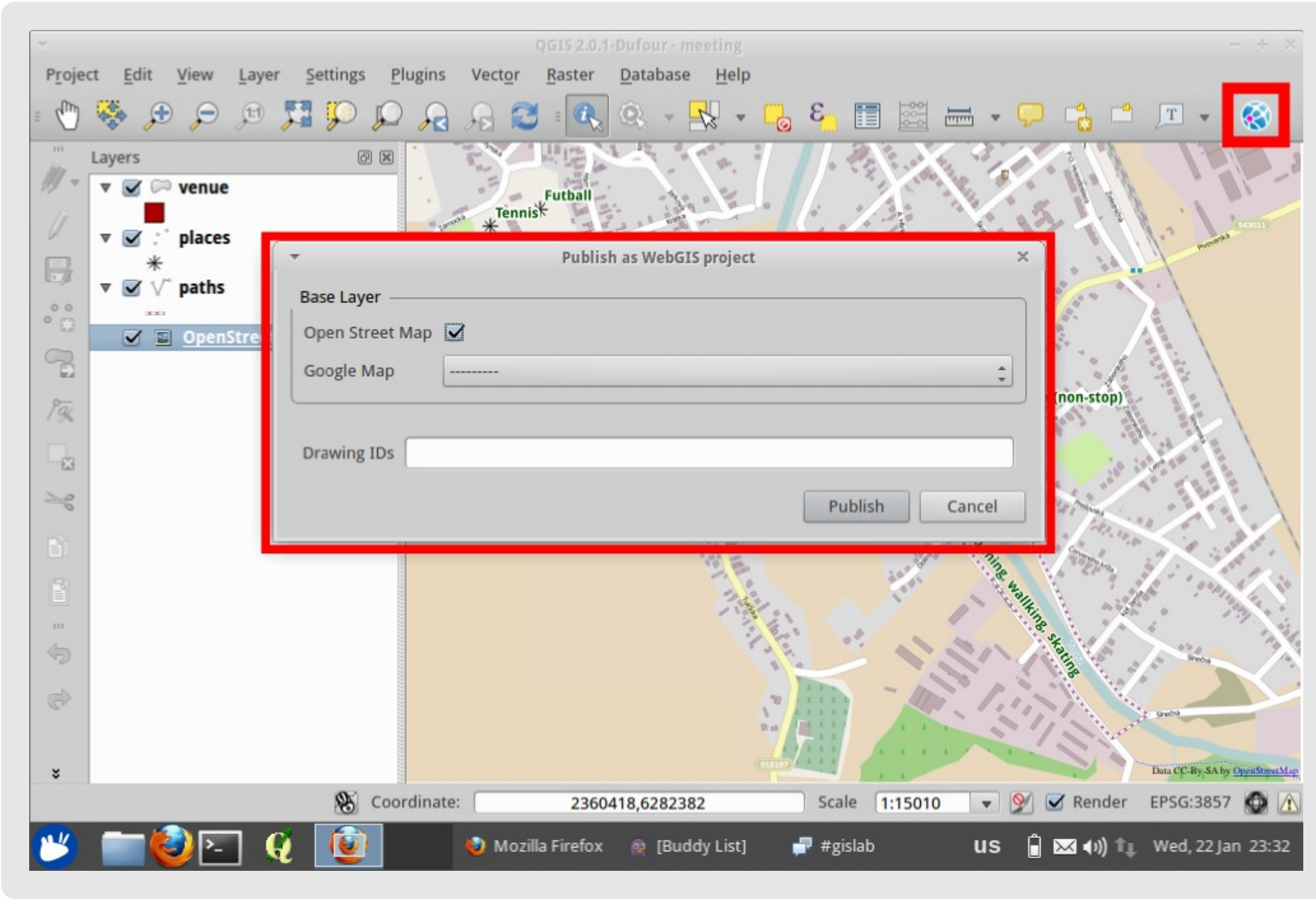
4. **Ivan**: Download data drawn by Janka.



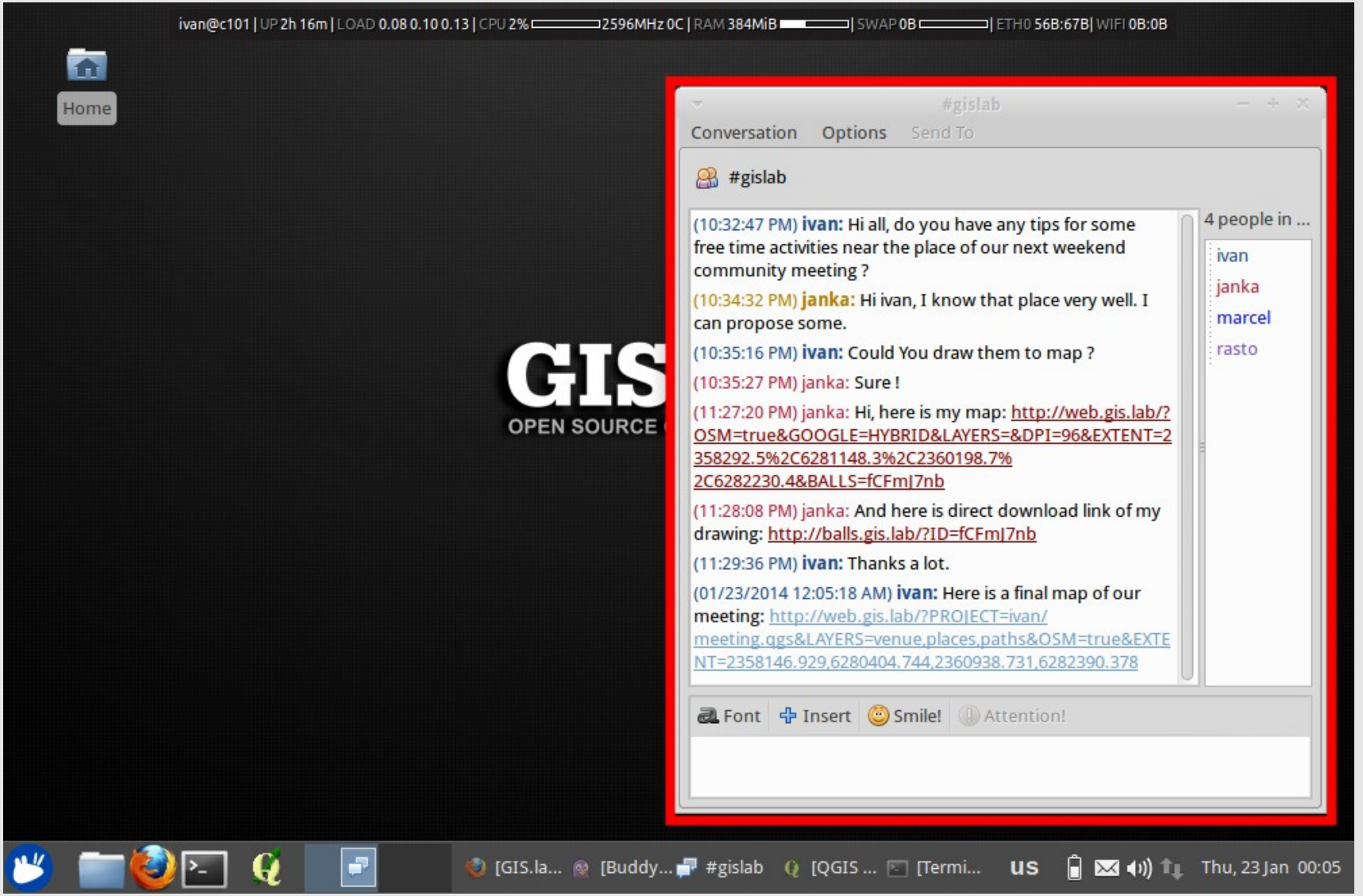
5. **Ivan**: Load data in new QGIS project.



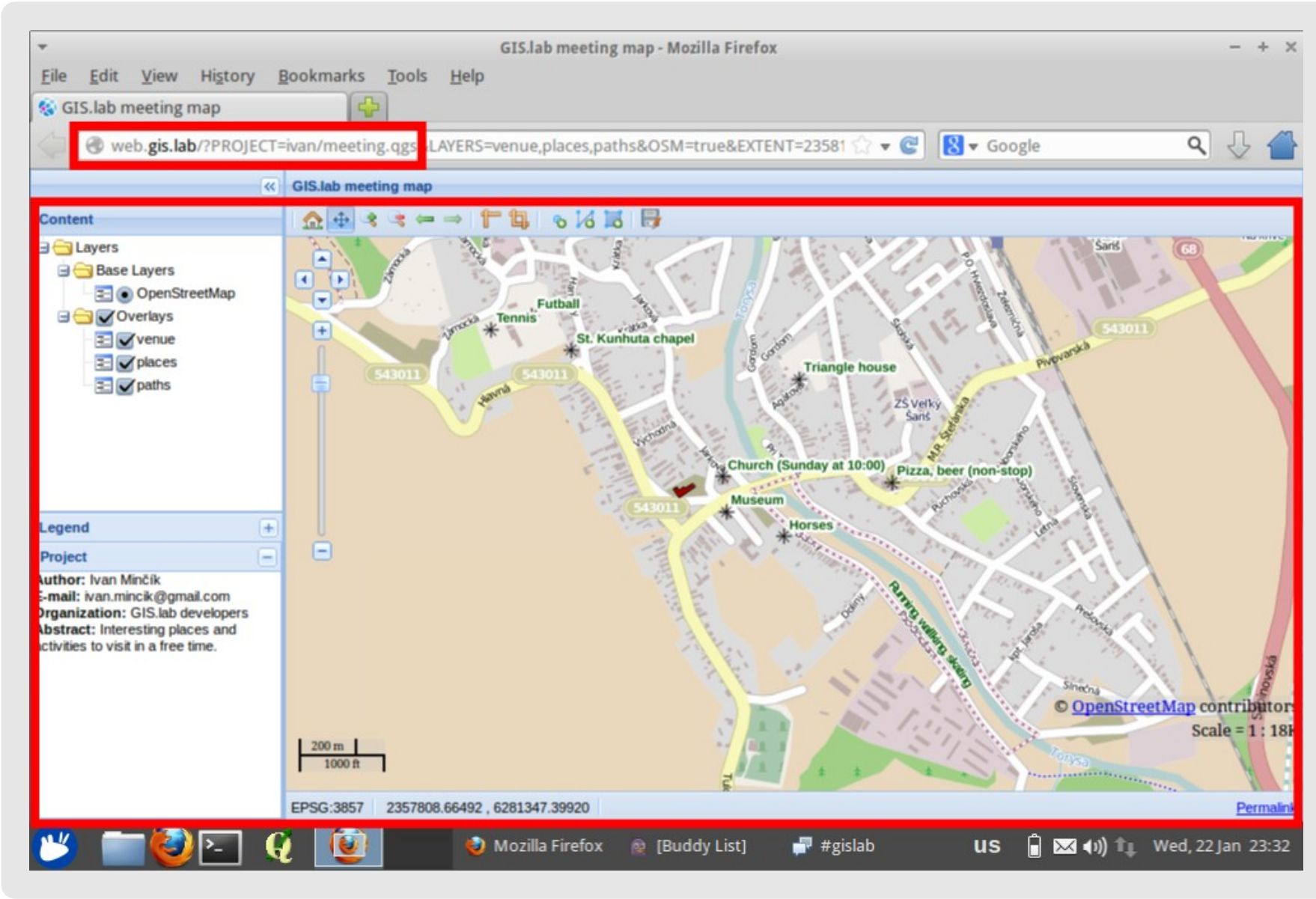
6. **Ivan**: Create map project from loaded data.



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
- Partner: University of Presov in Presov, www.unipo.sk
- Credits: developers of Linux, Debian, Ubuntu, Xubuntu, VirtualBox, Vagrant, LTSP, PostgreSQL, PostGIS, PgAdmin, SpatiaLite, QGIS, GRASS GIS and hundreds other Open Source libraries and server technologies

- Home page: **http://imincik.github.io/gis-lab**

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Gista
Open technologies

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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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