

# OpenStreetMap



## Introduction to OSM

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Thanks to Blars Blarson for the original slide deck :)

# OpenStreetMap



Why does OpenStreetMap exist?

What is OpenStreetMap?

How do I use OpenStreetMap?

How can I help OpenStreetMap?

# Why does OpenStreetMap exist?



- Most other maps are non-free
  - Maps need to be “free-as-liberty”
- Vector data for custom maps is difficult to obtain
- Users can improve the map
  - Fast updates
- Commercial maps have intentional errors
  - **Many areas of the world are mapped poorly**
  - **Allows local knowledge direct to map**
- Specialty maps
- Innovative uses

# What is OpenStreetMap?



- 2004 – OSM started by Steve Coast
- 2006 - OpenStreetMap Foundation established
  - Growth, development, distribution
- 2008 – OSM tools to GPS
- 2012 – Exodus from Google Maps
  - Many companies and governments now use OSM data
- Today – OSM is global
  - Conferences, Hackathons, Humanitarian Aid


# What is OpenStreetMap?



- Web Map
- Database of spatial vector data
- Free license
  - Currently CC-BY-SA
  - Future open data license
- Editable by users (wiki-style)
- GPX track archives

# What is OpenStreetMap?



 **OpenStreetMap**

Edit

▼

History


Export

GPS Traces

Search

Where am I?

Go



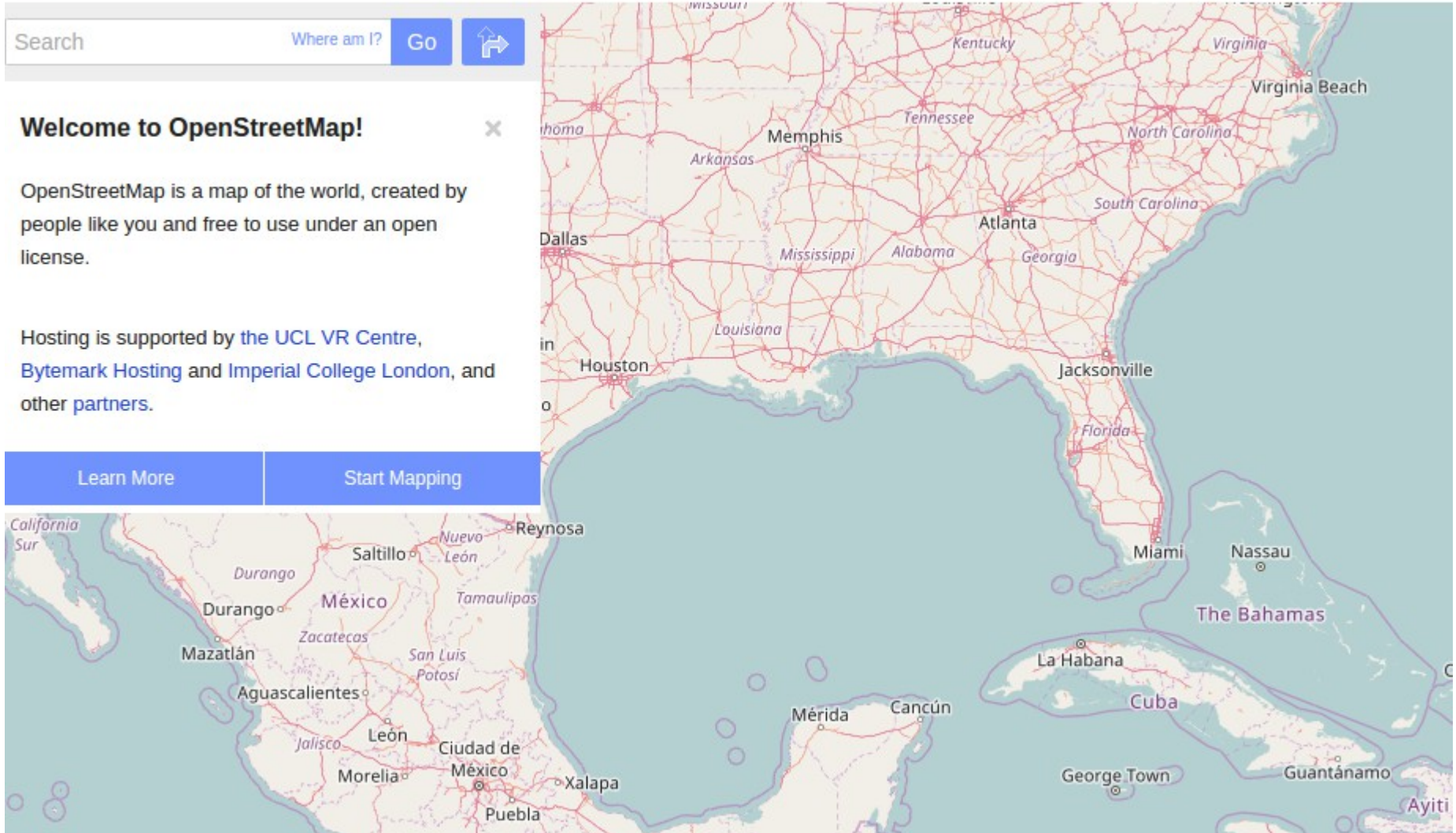
## Welcome to OpenStreetMap!

OpenStreetMap is a map of the world, created by people like you and free to use under an open license.

Hosting is supported by [the UCL VR Centre](#), [Bytemark Hosting](#) and [Imperial College London](#), and other [partners](#).

Learn More

Start Mapping

A screenshot of the OpenStreetMap website interface. The main map area shows a view of the United States, specifically the Southeast, with labels for states like Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, and Florida. Major cities like Memphis, Atlanta, Dallas, Houston, Jacksonville, Miami, and Virginia Beach are marked. The map also shows parts of Mexico, including states like Durango, Saltillo, Nuevo León, Tamaulipas, Zacatecas, San Luis Potosí, Aguascalientes, Jalisco, León, Ciudad de México, Morelia, Xalapa, and Puebla. The Gulf of Mexico and the Caribbean Sea are visible. The interface includes a search bar at the top left, a navigation bar with 'Edit', 'History', and 'Export' buttons, and a 'GPS Traces' link. A welcome message is displayed on the left side of the map.

# What is OpenStreetMap?



- Humanitarian OpenStreetMap Team
  - 2010 – Haiti earthquake
  - 2013 – HOT a US non-profit
  - Creates and provides up-to-date maps
    - For political crises, natural disasters
  - OSM Current tasking
    - <http://tasks.hotosm.org/>
  - “How to” resource
    - <https://mapgive.state.gov/learn-to-map/>
  - Wiki
    - [https://wiki.openstreetmap.org/wiki/Humanitarian\\_OSM\\_Team](https://wiki.openstreetmap.org/wiki/Humanitarian_OSM_Team)

# What is OpenStreetMap?



- OSM Data Sources
  - Data collected with GPS units
  - Public-domain
    - TIGER census maps of the US
  - “local knowledge”
  - Out-of-Copyright maps
  - Donated data
  - Appropriately Licensed imagery
  - **Do NOT** use copyright maps or data sources
    - without proper permission



# What is OpenStreetMap?



- nodes, ways, and relations
  - nodes are positions with optional tags
  - ways are sorted lists of nodes with tags
    - also used for areas
  - relations are ordered lists of members with roles and tags
- tags are strings
  - Key:value pairs
  - users can define new features
  - See the “Map Features” wiki page

# What is OpenStreetMap?



- External interface
  - XML (OSM and PBF format)
  - GeoJSON (ogr2ogr)
- Main database
  - PostgreSQL, PostGIS
- Services
  - Ruby-on-rails
  - API v0.6 (RESTful)
- Programs
  - Ruby, Java, Perl, Python, C, mumps, flash

# How do I use OpenStreetMap?



- Existing OSM Maps
  - Standard layer
  - CycleMap layer
  - Transport layer
  - Humanitarian
  - Maps for Garmin GPS
  - Routing
  - Local map servers
  - Geocoding
    - Nominatim

# How do I use OpenStreetMap?



- Editing the Map
  - iD (MapBox)
    - HTML5 and D3js
  - QGIS
  - Potlatch – aka the edit tab
    - Requires flash
    - has problems with slow net connections or server
  - JOSM – offline editor
    - requires java
    - uses a lot of memory
  - Merkaartor

# How do I use OpenStreetMap?



- Making Custom Maps
  - QGIS!
    - Custom Styling and more
  - Mapnik
  - TileMill/TileStache
  - Stamen
  - GeoServer/OpenLayers
  - Mapserver

# How do I use OpenStreetMap?



- Getting the Data
  - Weekly planet dumps
    - 2-5 GB change sets
    - 35 GB PBF file (compressed!)
    - 55 GB XML file (compressed!)
  - Daily, Hourly, and Minute change files
    - <https://wiki.openstreetmap.org/wiki/Planet.osm#Downloading>
  - Various extracts
  - API

# How can I help OSM?



- Hold regular Mapathons!
- Create GPX traces
  - Walking, biking, or driving
  - Notes with paper, voice recording, or camera
- Edit the map
- Write software
- Join the OSM Foundation
- Donate money
- Host servers

# OpenStreetMap Resources



- <http://www.openstreetmap.org/>
- <http://hotosm.org/>
- <http://wiki.openstreetmap.org/>
- <http://planet.openstreetmap.org/>
- <http://lists.openstreetmap.org/>
- <http://www.missingmaps.org/>
- HOT YouTube Tutorials
  - <https://www.youtube.com/channel/UC0C055kpMy82mdE8YHORnfw>
- <irc://irc.oftc.net/#osm>