Introduzione a OpenStreetMap

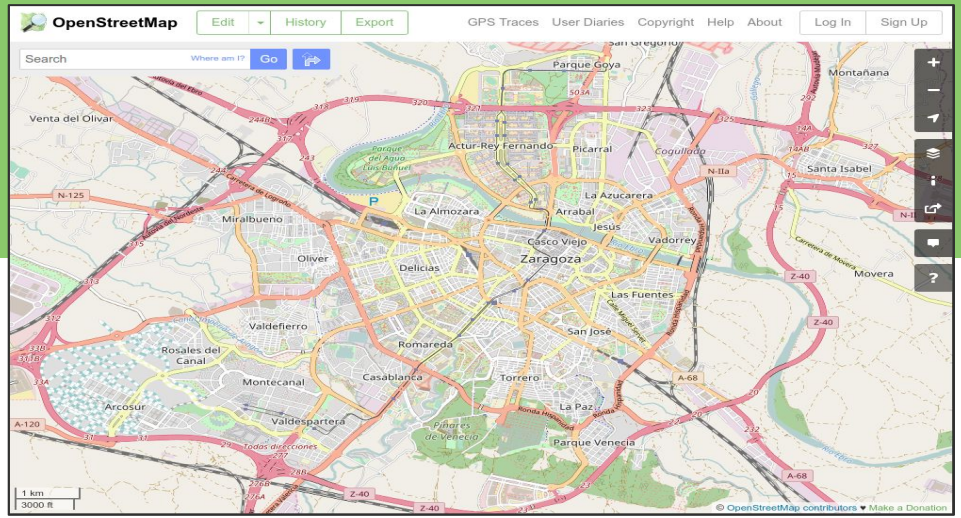
Alessandro Frigeri
Istituto Nazionale di Astrofisica

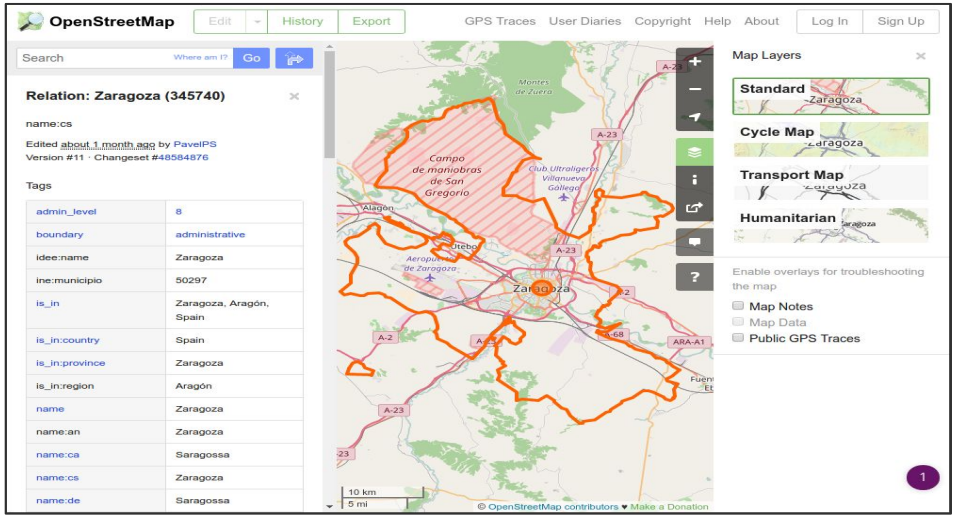
Università La Sapienza, Roma
3-4 Agosto 2022

Presentazione derivata da materiale CC BY-SA del grupo Mapeado Colaborativo / Geoinquietos Zaragoza e della Comunità di Openstreemap
Miguel Sevilla-Callejo, Héctor Ochoa Ortiz, Jorge Sanz Sanfructuoso, Xurxo Sanz, Alejandro Suárez, Jaime Crespo y Carlos Cámara

OpenStreetMap

La Wikipedia delle mappe



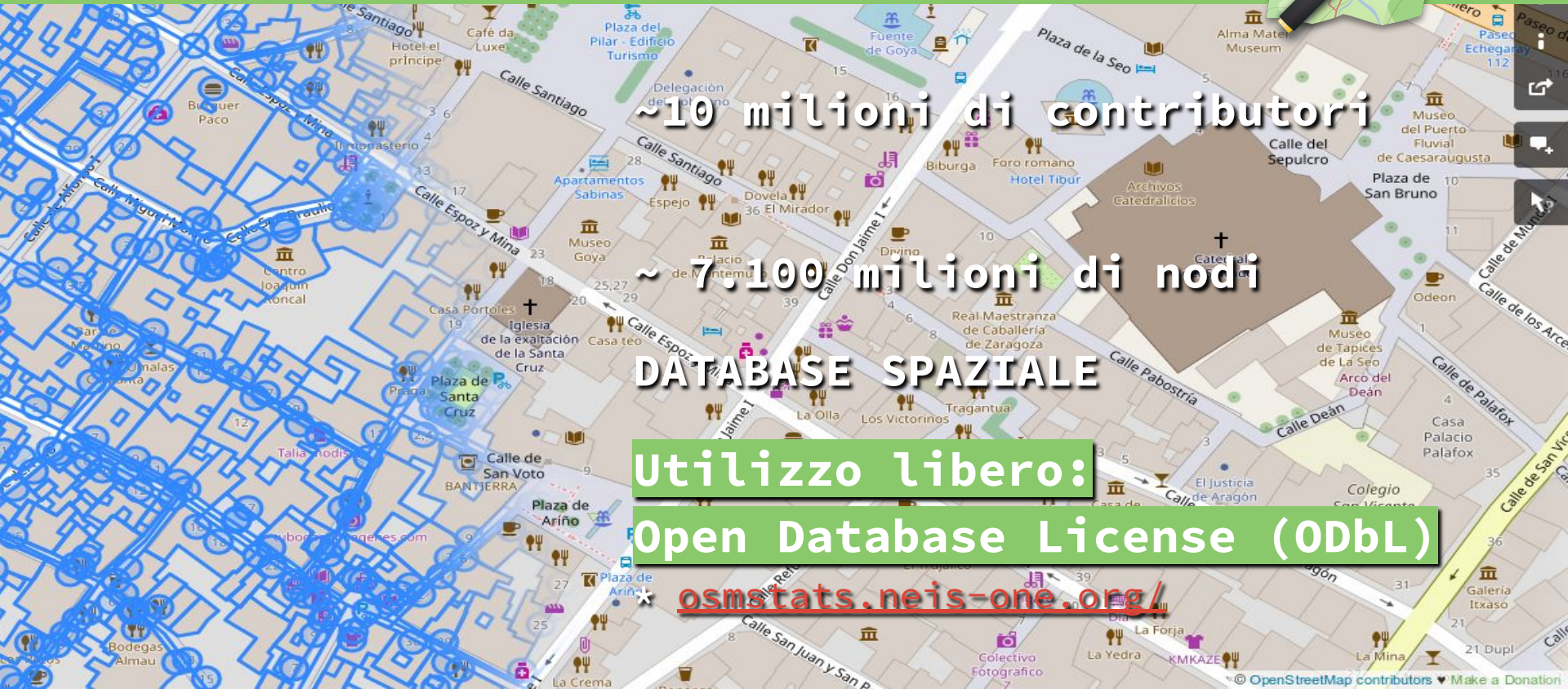


OpenStreetMap
La Wikipedia delle Mappe

“creare e distribuire dati geografici liberi, promuovendone accessiblità e riutilizzo”

… partendo dai contributi volontari e collaborativi della comunità

OpenStreetMap: La Wikipedia delle Mappe



~10 milioni di contributori

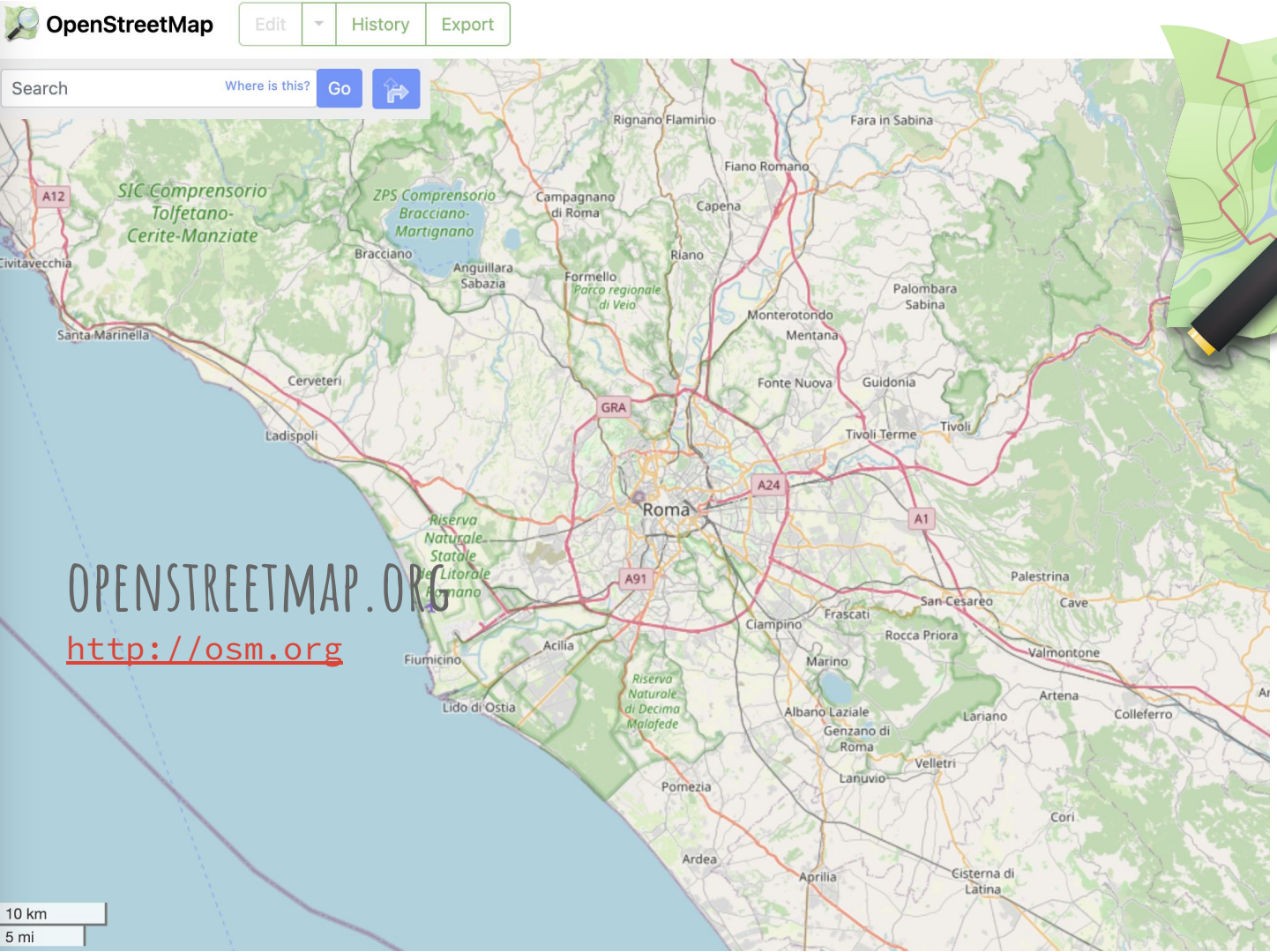
~ 7,100 milioni di nodi

DATABASE SPAZIALE

Utilizzo libero:

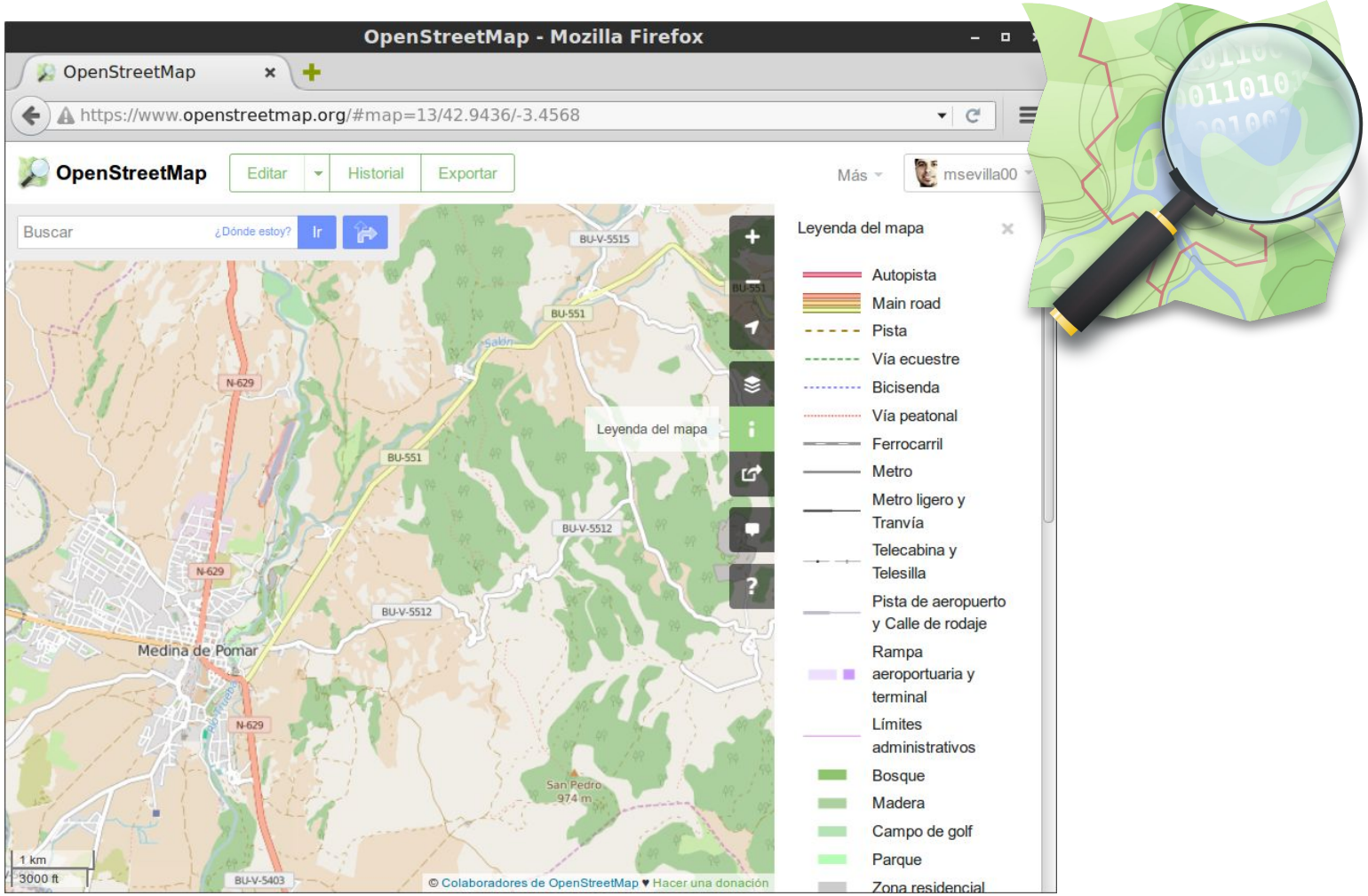
Open Database License (ODbL)

* osmstats.neis-one.org/



OPENSTREETMAP.ORG

http://osm.org


OpenStreetMap - Mozilla Firefox
OpenStreetMap
https://www.openstreetmap.org/#map=13/42.9436/-3.4568
OpenStreetMap
Editar
Historial
Exportar
Más
msevilla00
Buscar
¿Dónde estoy?
Ir
Leyenda del mapa
Autopista
Main road
Pista
Vía ecuestre
Bicisenda
Vía peatonal
Ferrocarril
Metro
Metro ligero y Tranvía
Telecabina y Telesilla
Pista de aeropuerto y Calle de rodaje
Rampa aeroportuaria y terminal
Límites administrativos
Bosque
Madera
Campo de golf
Parque
Zona residencial
BU-V-5515
BU-551
N-629
BU-V-5512
Medina de Pomar
San Pedro
974 m
BU-V-5403
1 km
3000 ft
© Colaboradores de OpenStreetMap ♥ Hacer una donación

LEGENDA STANDARD (MAPNIK) NOV. 2015

Map Key

- Motorway
- Main road
- Track
- Bridleway
- Cycleway
- Footway
- Railway
- Subway
- Light rail and tram
- Cable car and chair lift
- Airport Runway and taxiway
- Airport apron and terminal
- Administrative boundary
- Forest
- Wood
- Golf course
- Park
- Residential area
- Common, meadow, and garden
- Retail area
- Industrial area
- Commercial area
- Heathland
- Lake and reservoir
- Farm
- Brownfield site
- Cemetery
- Allotments
- Sports pitch
- Sports centre
- Nature reserve
- Military area
- School and university
- Significant building
- Railway station
- Summit and peak
- Dashed casing = tunnel
- Black casing = bridge
- Private access

Why the world needs OpenStreetMap | Technology | The Guardian - Mozilla Firefox

Why the world n...

www.theguardian.com/technology/2014/jan/14/why-the-world-needs-openstreetmap

sign in search jobs more UK edition

theguardian

Winner of the Pulitzer prize

home › tech games UK world sport football comment culture econo all

Mapping technologies

Why the world needs OpenStreetMap

As more private companies offer us maps, we need an open-source, editable solution - a cartographical Wikipedia

http://www.theguardian.com/technology/2014/jan/14/why-the-world-needs-openstreetmap

Humanitarian Open Street Map Team

EL PAÍS

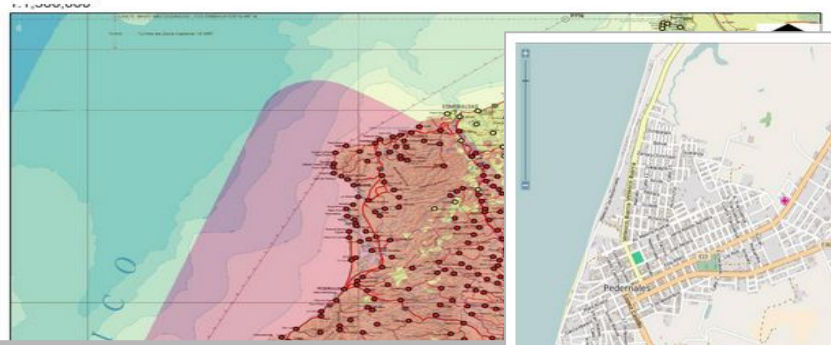
PLANETA FUTURO

RED DE EXPERTOS ›

Cómo ayudar a Ecuador después del terremoto

El mapeo humanitario permite construir mapas base para ONG y equipos de rescate con el apoyo de voluntarios de todo el mundo

18



Listado de principales ciudades

A la izquierda, un mapa de Open Street Map de una de las zonas afectadas por el terremoto en Ecuador. A la derecha, el mismo espacio en Google Maps.

http://elpais.com/...

Global development professionals network Reshaping humanitarian action

Could mapping tech revolutionise disaster response?

After pioneering crowdsourced mapping in wake of the Nepal earthquake last year Nama Budhathoki's organisation wants to take the technology to the rest of the world

http://www.theguardian.com/global-development-professionals-network/2016/apr/25/could-mapping-tech-revolutionise-disaster-response

4 / 4

A map put together using OpenStreetMap data created by the OSM volunteers. The map was used to plan field trips and navigate to the remote parts of the country to help the earthquake victims.

Photograph: The Disaster Assistance Response Team (DART) from Canada

http://www.theguardian.com/global-development-professionals-network/2016/apr/25/could-mapping-tech-revolutionise-disaster-response

MEDECINS SANS FRONTIERES
DOCTORS WITHOUT BORDERS

Medical aid where it is needed most. Independent. Neutral. Impartial.

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HOME › SUPPORT US › EVENTS:

Missing Maps Project

- Fundraise for MSF
- Philanthropy
- **Events**
  - Upcoming events
  - Advertise your event
  - Request an MSF speaker
  - MSF Scientific Day
  - MSF UK Fun Run
  - MUSE invite MSF on Tour
  - **Missing Maps Project**
- Give in your will
- Corporate support
- University groups

The most crisis-prone parts of the developing world will be mapped within two years. With your help we can directly improve the lives of some of the planet's most vulnerable people.

This is the aim of the Missing Maps Project, an open, collaborative initiative founded by Médecins Sans Frontières/Doctors Without Borders (MSF), the British Red Cross, the American Red Cross and the Humanitarian OpenStreetMap Team (HOT).

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29.04.2016

Kunduz: Initial reaction to public release of U.S. military investigative report

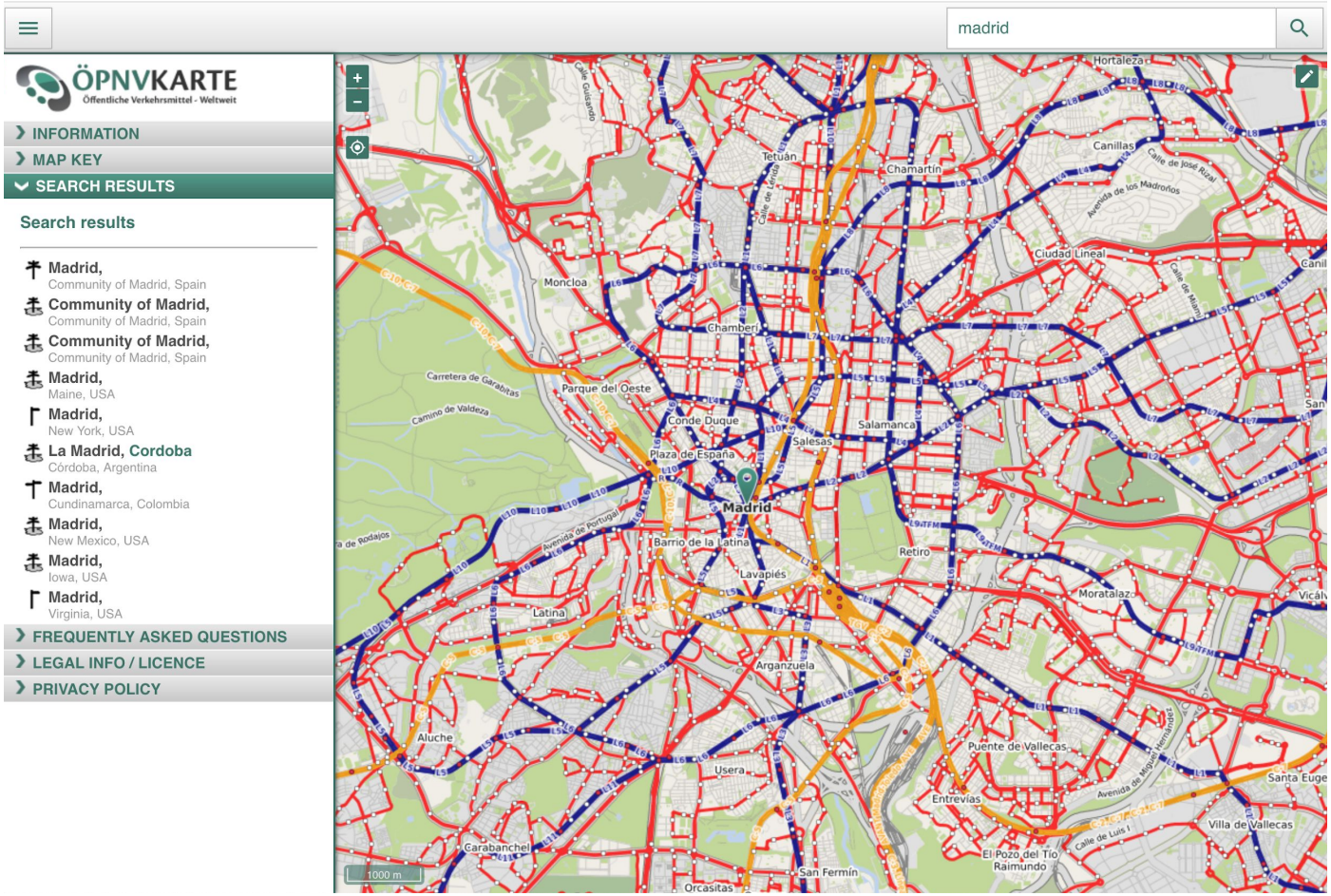
STORY FROM THE FRONT LINE

29.04.2016

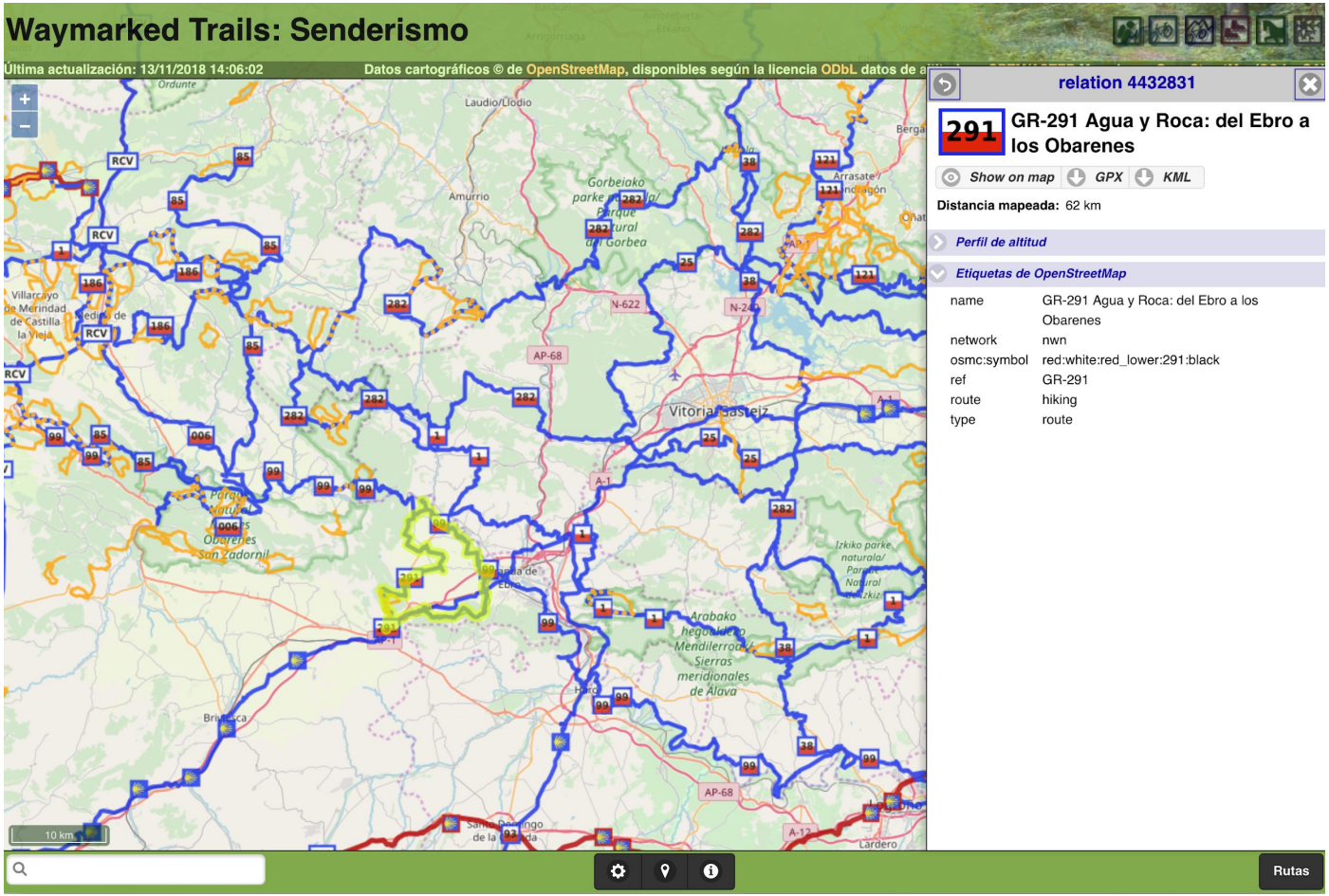
Syria: The airstrike on an

http://www.msf.org.uk/missing-maps-project | http://www.missingmaps.org/

http://www.wheelmap.org



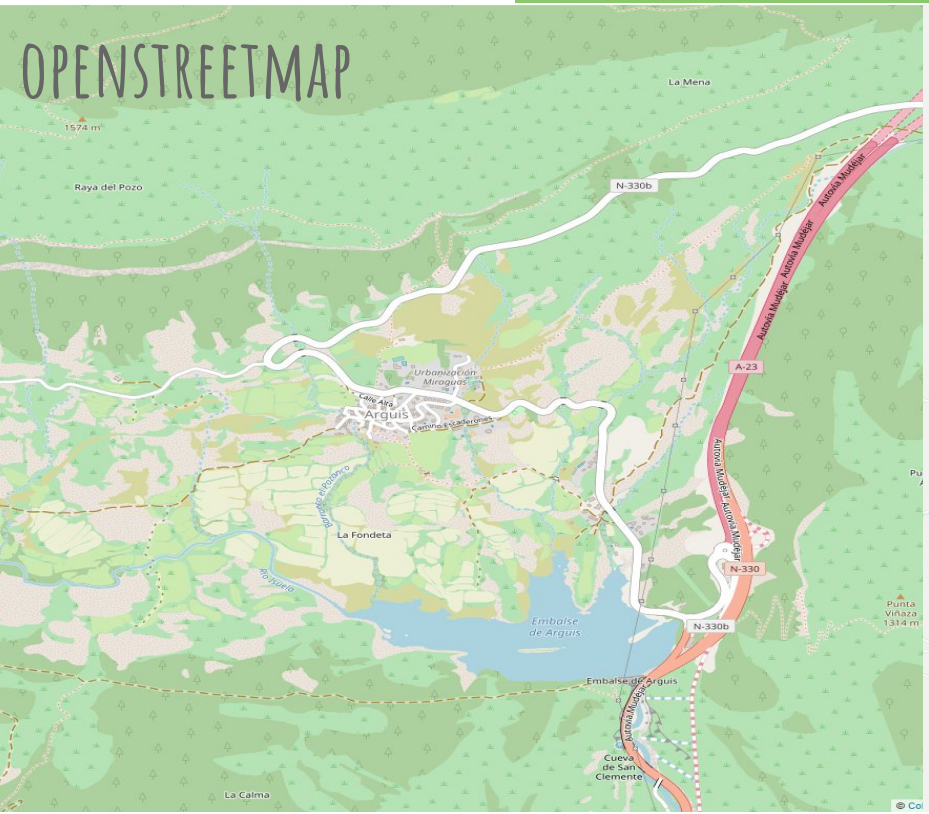
http://öpnvkarte.de/

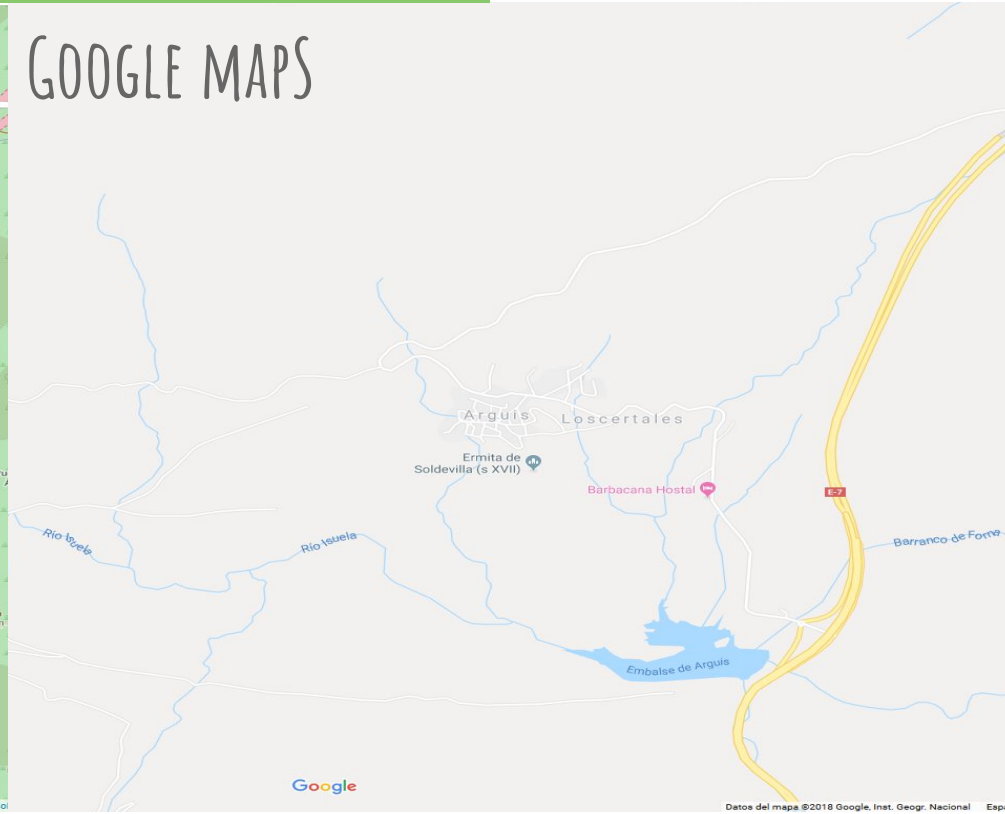


https://hiking.waymarkedtrails.org/

http://demo.f4map.com

OSM vs Google Maps





COSA POSSIAMO MAPPARE?

TUTTO

Il limite è la nostra immaginazione

CHI PUO' MAPPARE?

TUTTI POSSIAMO FARLO

Per divertimento, per lavoro, per volontariato

OSM --> DATABASE DI DATI SPAZIALI

- OSM non è solo openstreetmap.org
- Quelli “importanti” sono i dati
  - Si possono usare liberamente (citando)
  - Si possono utilizzare “in tempo reale”
  - Si possono tracciare i cambiamenti

CC-BY-SA beta.map1.eu - colaboradores OpenStreetMap

LA LICENZA ODBL

OPEN DATA

Open Data Commons Open Database License

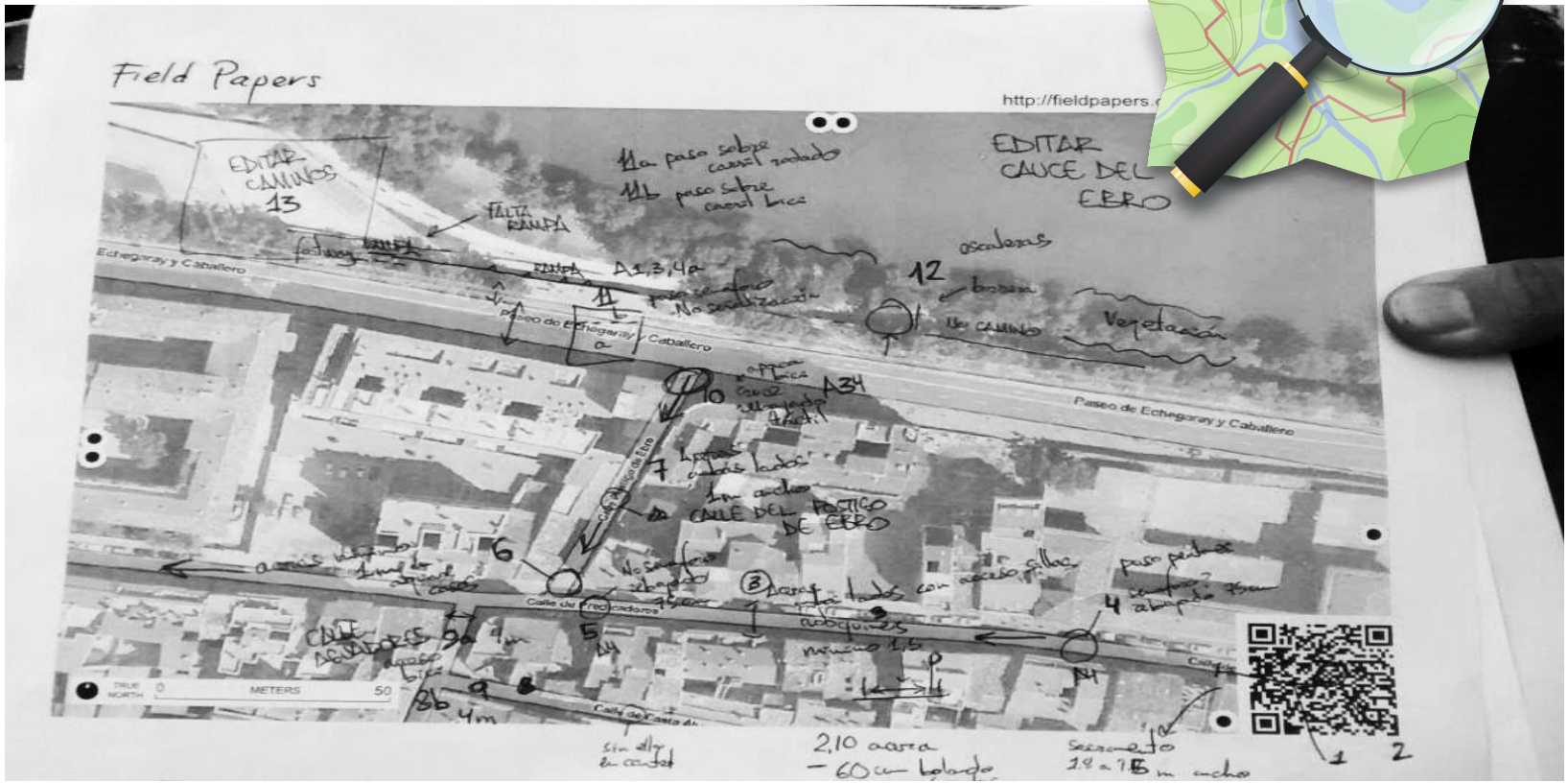
- Si è liberi di:
  - copiare, distribuire
  - usare
  - modificare e trasformarare il database
- Solo se:
  - citiamo sempre la fonte
  - Ed i lavori derivati:
    - Vengono distribuiti con licenza simile

Procedura di lavoro

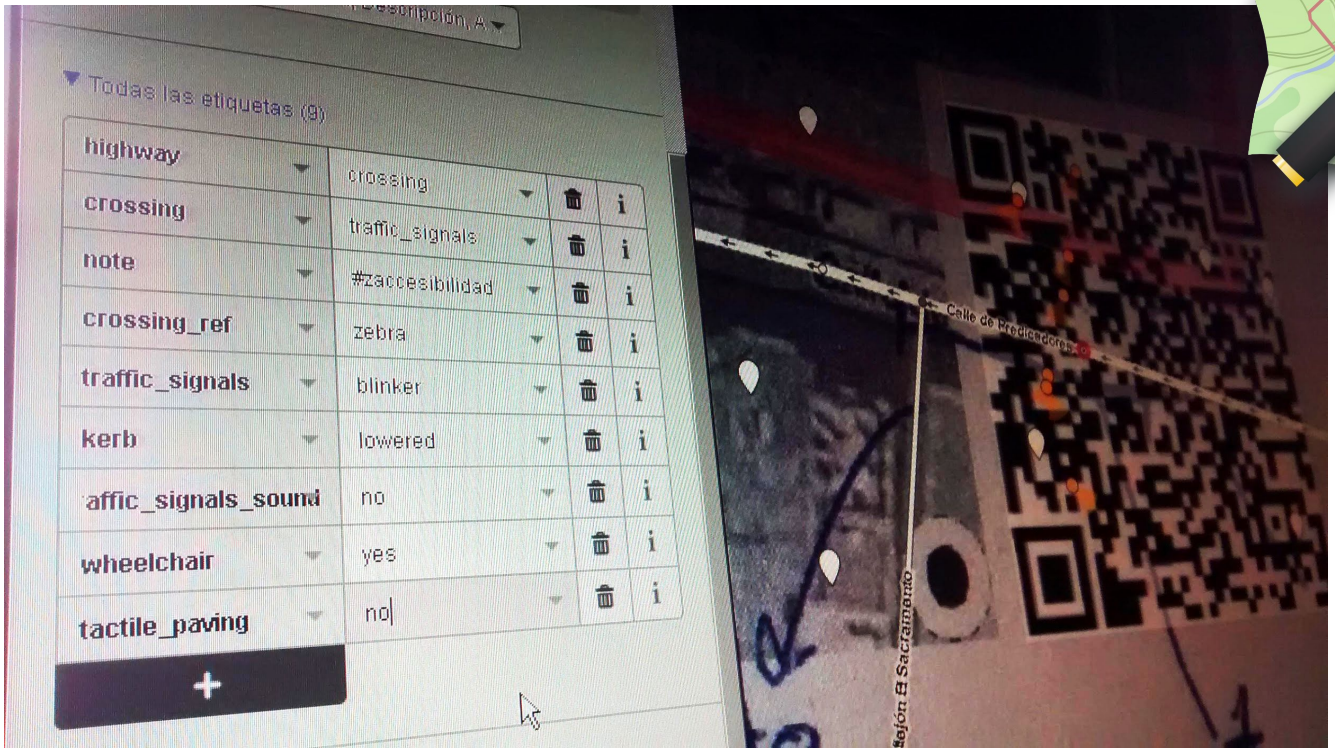
1. unirsi alla comunità
2. raccogliere i dati
3. sottomettere i dati ai servizi OSM
4. generare le mappe

CC-BY-SA beta.map1.eu - colaboradores OpenStreetMap

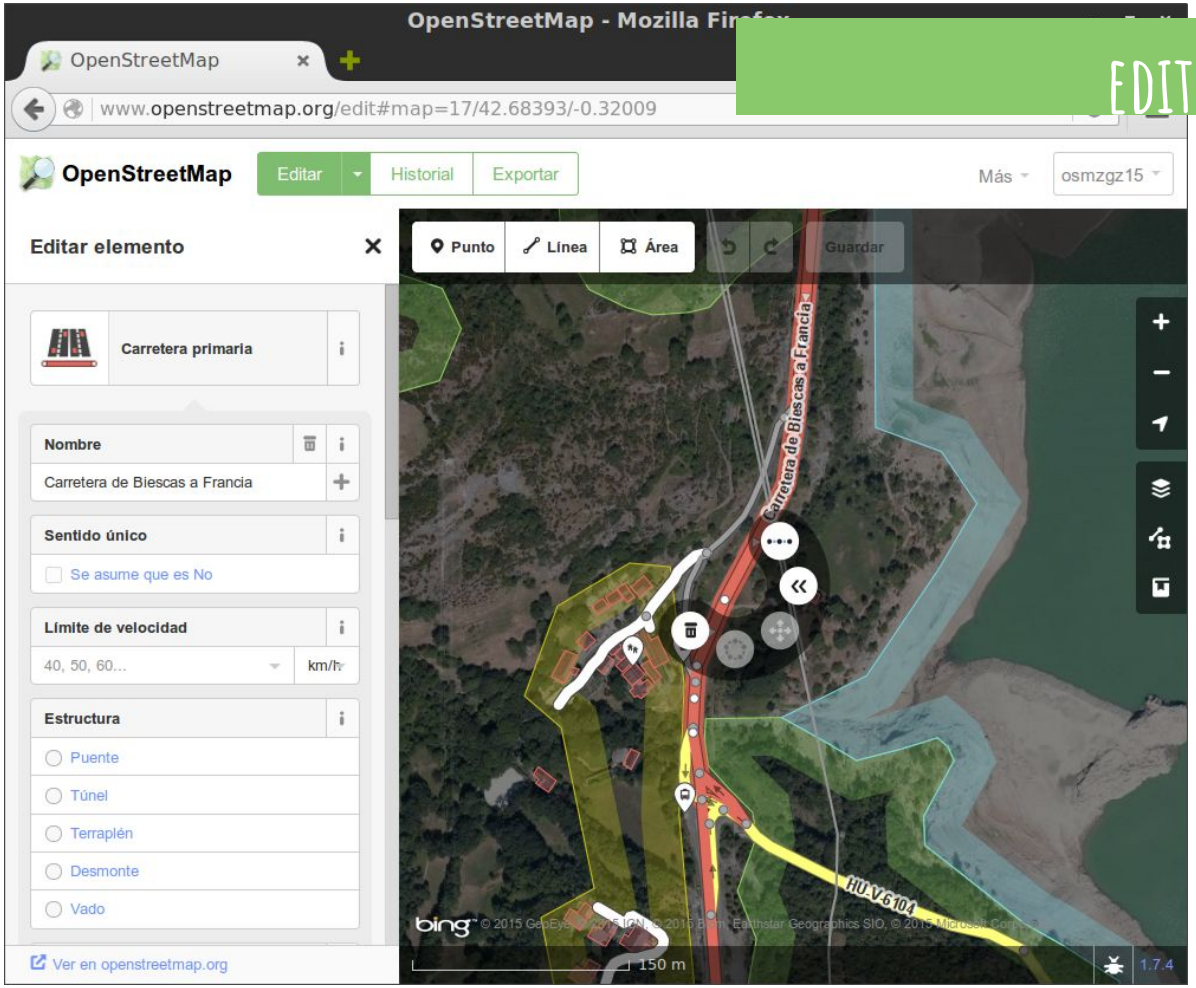
FieldPapers



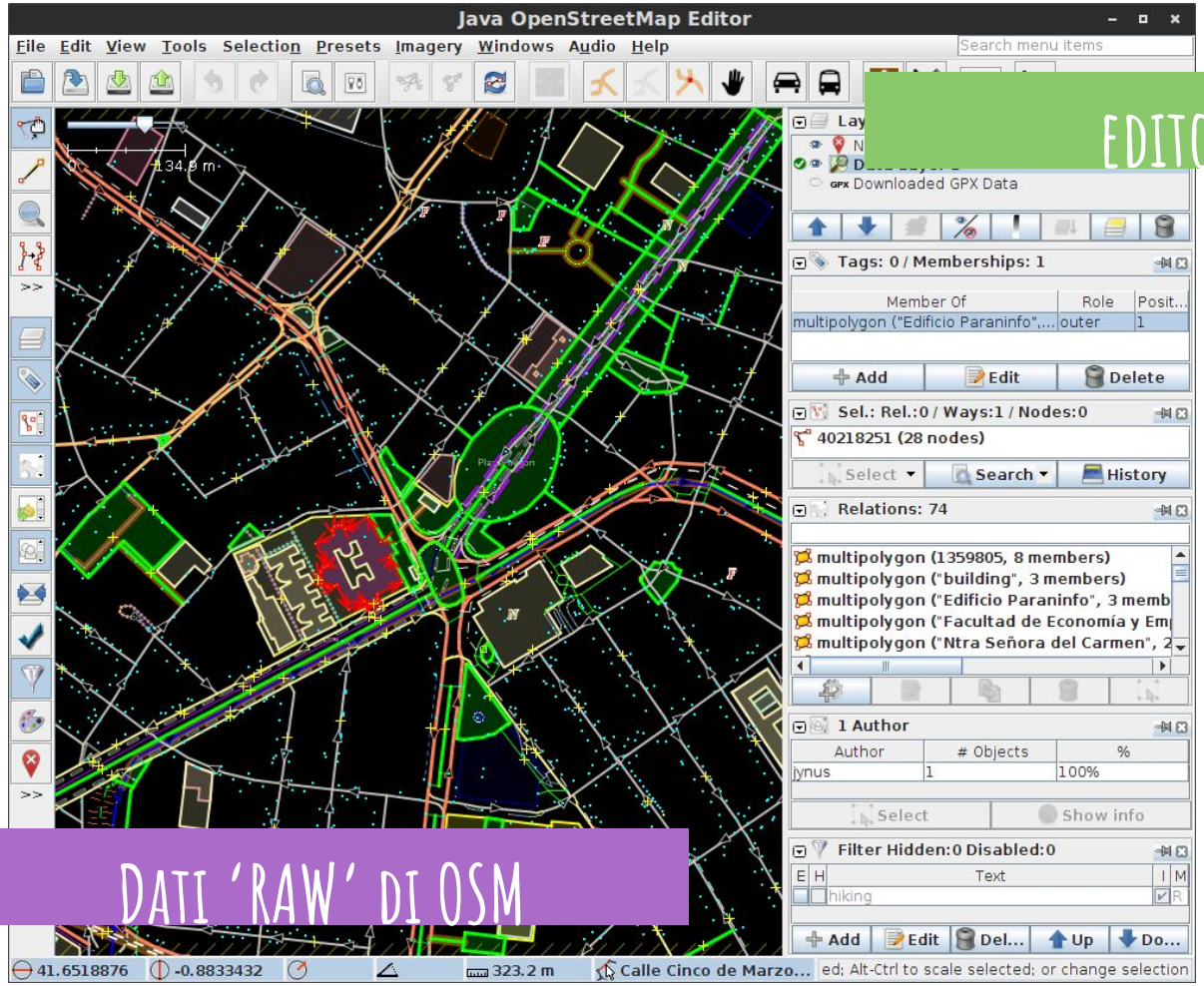
Introduzione ai dati OSM



EDITOR ID


OpenStreetMap - Mozilla Firefox
OpenStreetMap
www.openstreetmap.org/edit#map=17/42.68393/-0.32009
OpenStreetMap
Editar
Historial
Exportar
Más
osmzgz15
Editar elemento
Punto
Línea
Área
Guardar
Carretera primaria
Nombre
Carretera de Biescas a Francia
Sentido único
Se asume que es No
Límite de velocidad
40, 50, 60...
km/h
Estructura
Puente
Túnel
Terraplén
Desmonte
Vado
Ver en openstreetmap.org
Carretera de Biescas a Francia
HU-V6104
150 m
1.7.4

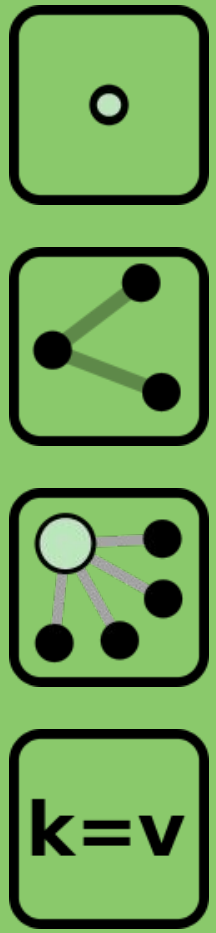
EDITOR JOSM



DATI 'RAW' DI OSM

I DATI DI OSM

elementi ed etichette



IDENTIFICHIAMO GLI ELEMENTI...

MODELLO DATI TOPOLOGICO

>> Componenti della
Informazione Geografica

- componente spaziale
  Tipologia di base
  - nodi / nodes
  - linee / ways

- componente tematica
  chiave e valori
  - shop=bakery
  - name=Panadería Alonso

- relazioni

Dove?

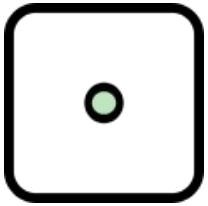
Che forma?

Cosa?

Come si relaziona?

Punti --> nodes

- attributi importanti: identificatore, latitudine e longitudine, utente che ha creato il nodo, la data
- contenuto: chiave/valore



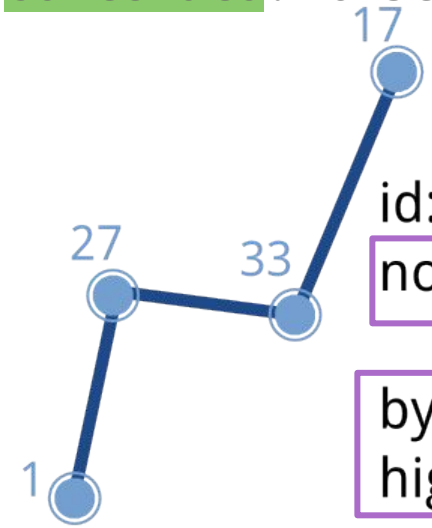
id: 10965569
latitud: 39,4677055
longitud: -0,4248958
version: 1

amenity: bicycle_rental
name: Aparcamiento Bici Pública Horta Sud

fuente: Jorge Sanz http://jsanz.github.io/slides-osm/

LINEE --> WAYS

- nodi ordinati (possono essere chiusi)
- attributi: id, utente, versione
- contenuto: lista di nodi e chiave/valori



id: 9

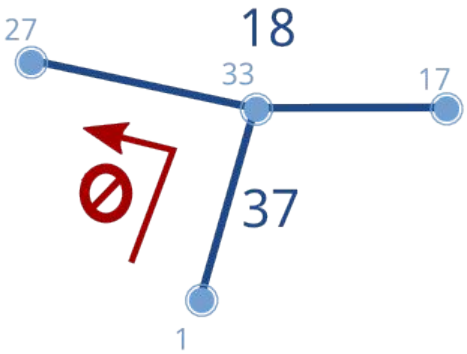
nodos: 1,27,33,17

bycicle: yes
highway: cycleway

fuente: Jorge Sanz http://jsanz.github.io/slides-osm/

RELAZIONI --> RELATIONS

- attributi: id, visible, utente e data
- contenuto:
  - membro: id, tipo e ruolo nella relazione
  - etichette



miembros:
id: 37, tipo: vía, rol "desde"
id: 18, tipo: vía, rol "hacia"
id: 33, tipo: nodo, rol "por"

etiquetas:
tipo: restricción
tipo: no girar izquierda

fonte: Jorge Sanz http://jsanz.github.io/slides-osm/

Etichette --> chiave = valore

- assegnano significato / tipo agli elementi geometrici (nodi, vie e relazioni)
- una **etichetta** è una coppia **chiave->valore**
- Esempio (SS-4):

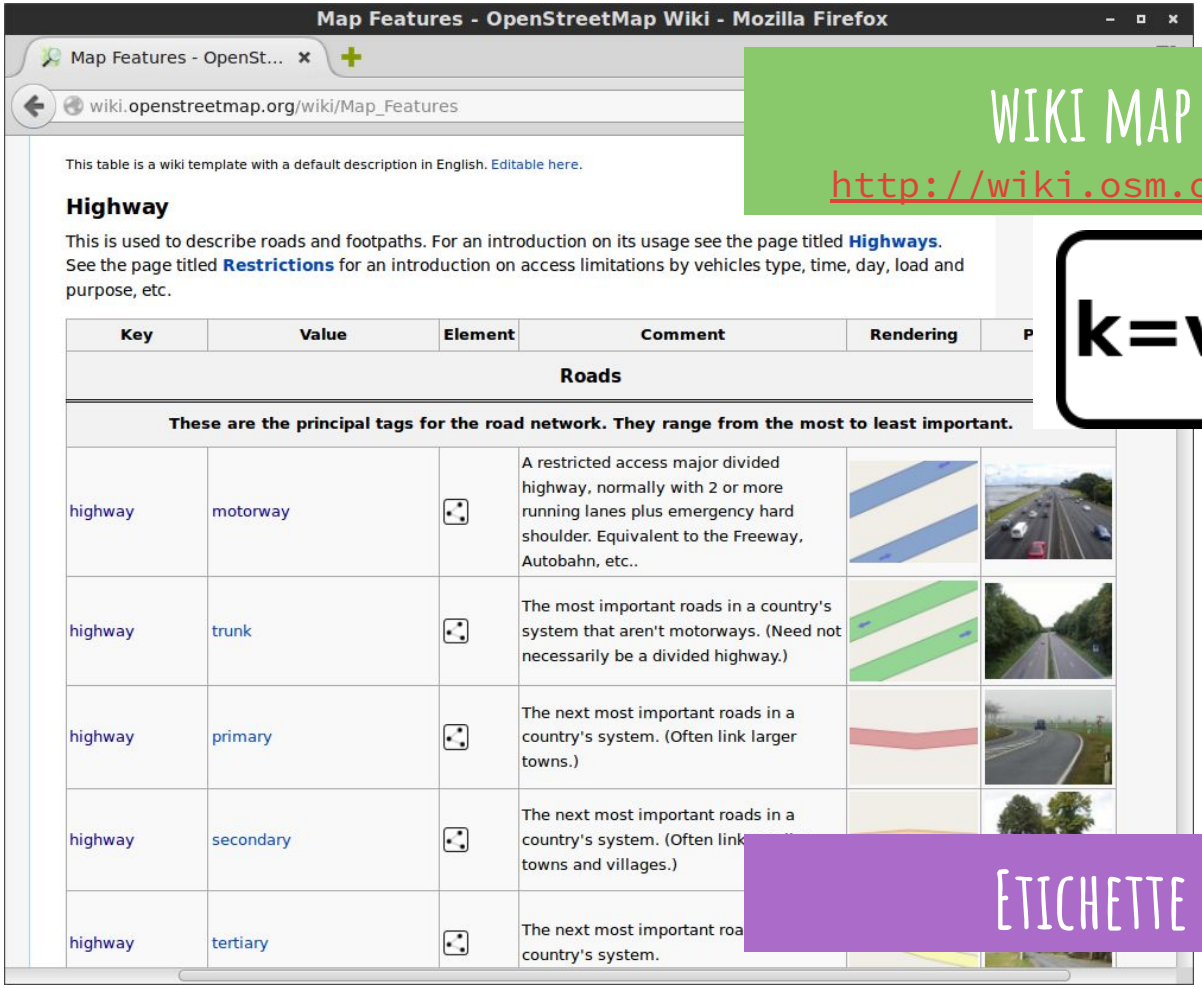
  [chiave/key] = [valore/value]

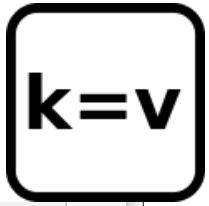
  highway = *motorway*
  ref = *SS-4*
  name = *Strada Statale Salaria*

fuente: Javier Crespo http://www.openstreetmap.es/2011/10/19/resumen-jornadas-openstreetmap-deusto-2011/

WIKI MAP FEATURES

http://wiki.osm.org/Map_Features





ETICHETTE COMUNI

highway

v·d·e

Description

The highway tag is the primary tag used for any kind of street or way.

Group: Highway

Used on these elements

Documented values: 323

Useful combination

- abutters=*
- access=*
- maxheight=*
- maxspeed=*
- maxweight=*
- oneway=*
- width=*

Implies

- access=yes

Status: Approved

taginfo [More...]

	5 863 546
	82 587 207
	15 062

Tools for this tag

- taginfo, fr, uk, ie, us
- overpass-turbo

building

v·d·e

Description

To mark the outline of a building.

Group: Man made

Used on these elements

Documented values: 123

Useful combination

- addr=*
- name=*
- height=*
- building:levels=*
- entrance=*
- shop=*
- amenity=*
- office=*
- craft=*
- building:architecture=*

Implies

area=yes

Status: Approved

taginfo [More...]

	772 241
	141 640 354
	183 751

Tools for this tag

- taginfo, fr, uk, ie, us
- overpass-turbo

amenity

v·d·e

Description

For describing useful and important facilities for visitors and residents.

Group: Amenity

Used on these elements

Documented values: 712

Status: *Unspecified*

taginfo [More...]

	4 865 406
	2 942 377
	35 051

Tools for this tag

- taginfo, fr, uk, ie, us
- overpass-turbo

natural

v·d·e

Description

Used to describes natural physical land features, including ones that have been modified by humans.

Group: Natural

Used on these elements

Documented values: 197

Status: Approved

taginfo [More...]

	5 461 980
	11 658 352
	504 708

Tools for this tag

- taginfo, fr, uk, ie, us
- overpass-turbo

ETICHETTE

ELEMENTI & TAGINFO

Navighiamo nella wiki

Identifichiamo etichette

Troviamo chiavi e valori

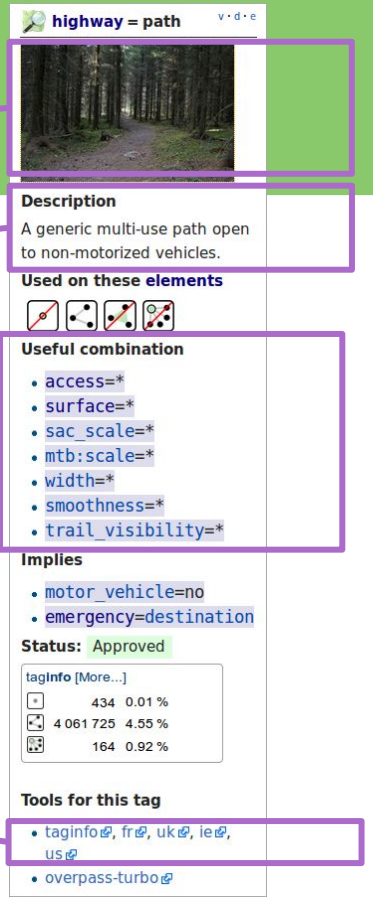
Collegamento a Taginfo

FOTO

DESCRIZIONE

COMBINAZIONI POSSIBILI

TAGINFO

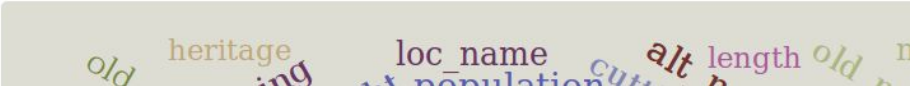


taginfo

CLAVES

building • source • highway • name • amenity •

ALGUNAS CLAVES POPULARES



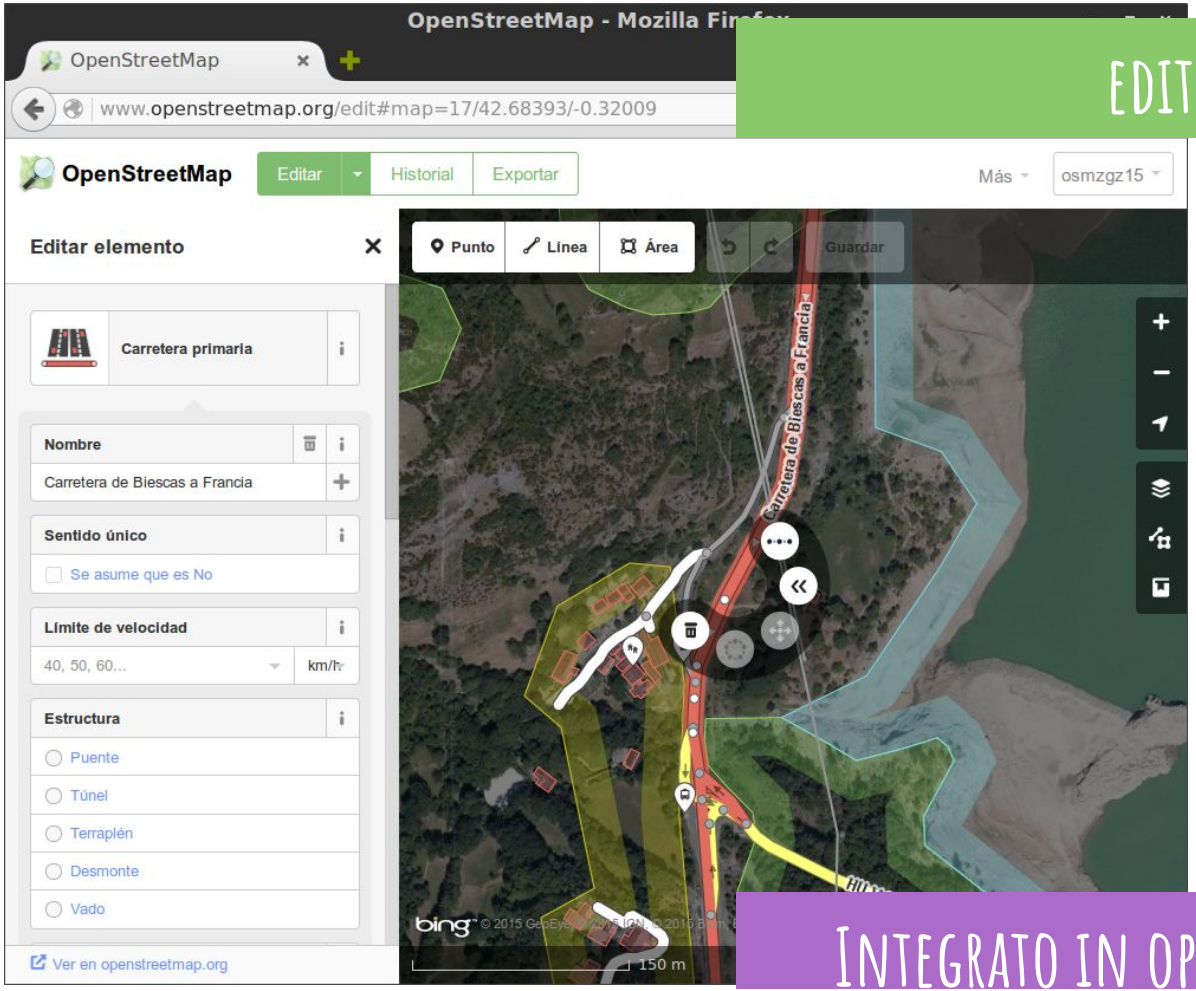
IMPORTANTISSIMO:
NON COPIARE DA ALTRE MAPPE

(SALVO SE ABBIAMO AUTORIZZAZIONE)

Editor iD

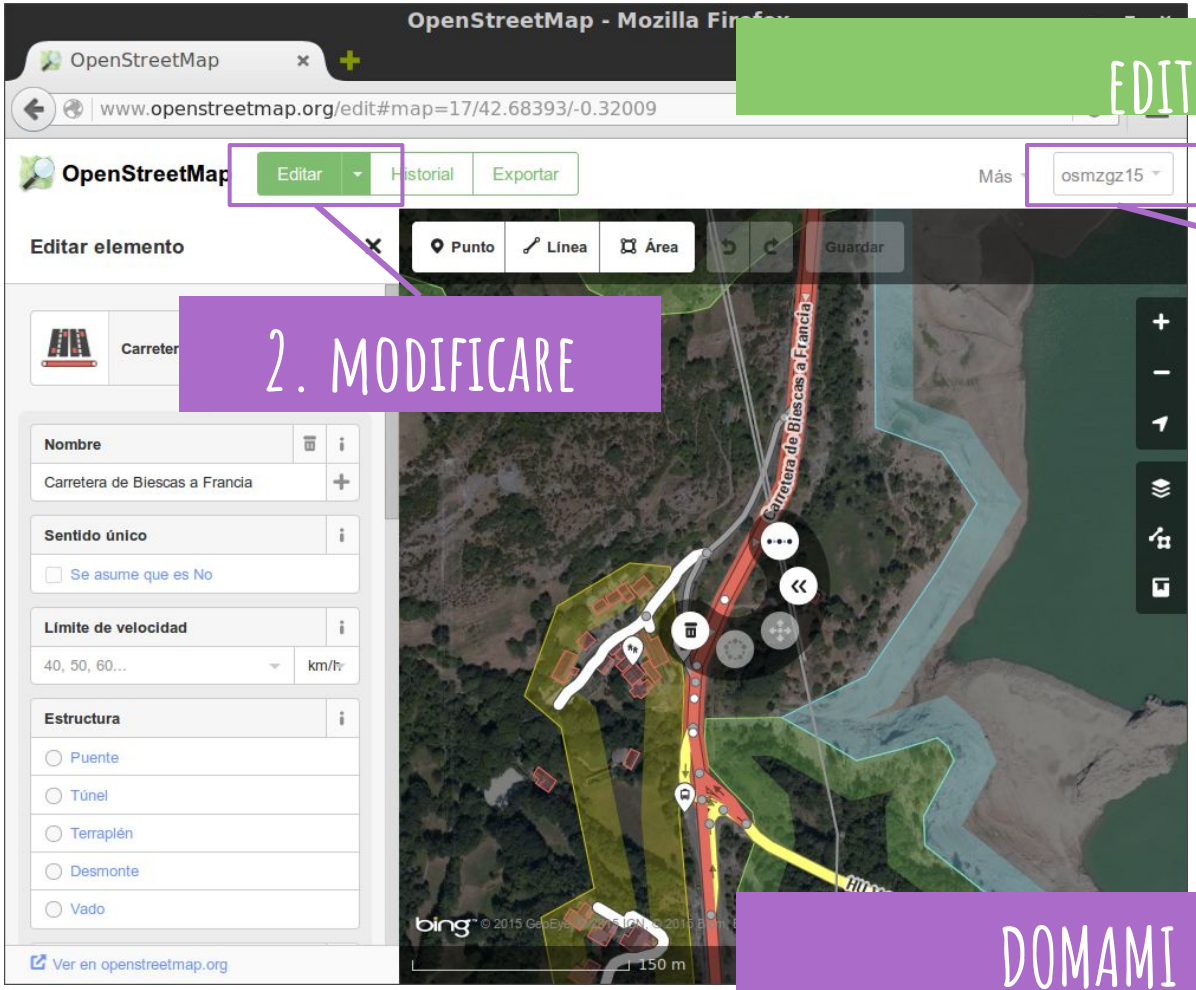
D3.js

EDITOR ID



INTEGRATO IN OPENSTREETMAP.ORG

EDITOR ID

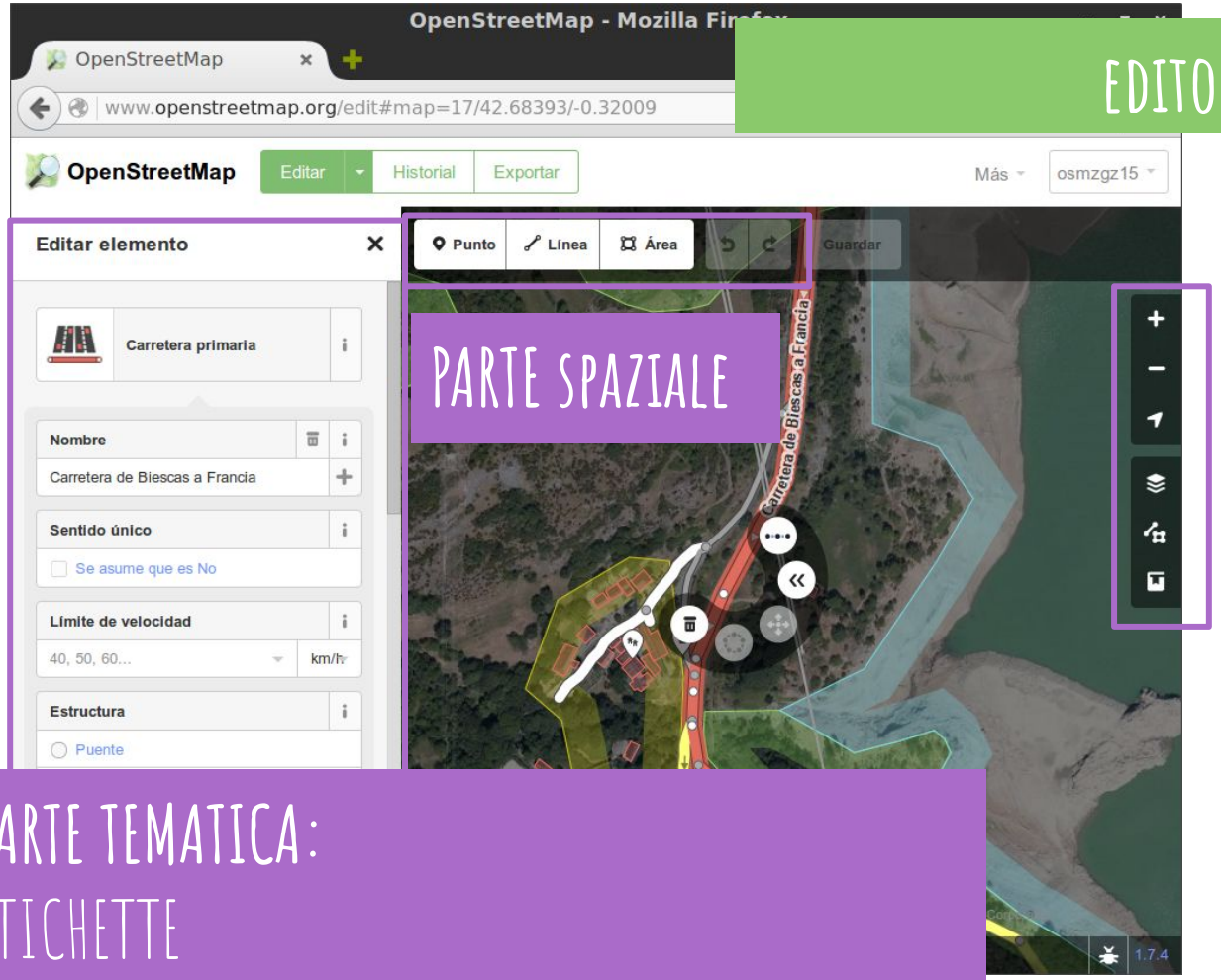


2. MODIFICARE

1. IDENTIFICARSI

DOMAMI EDITIAMO!

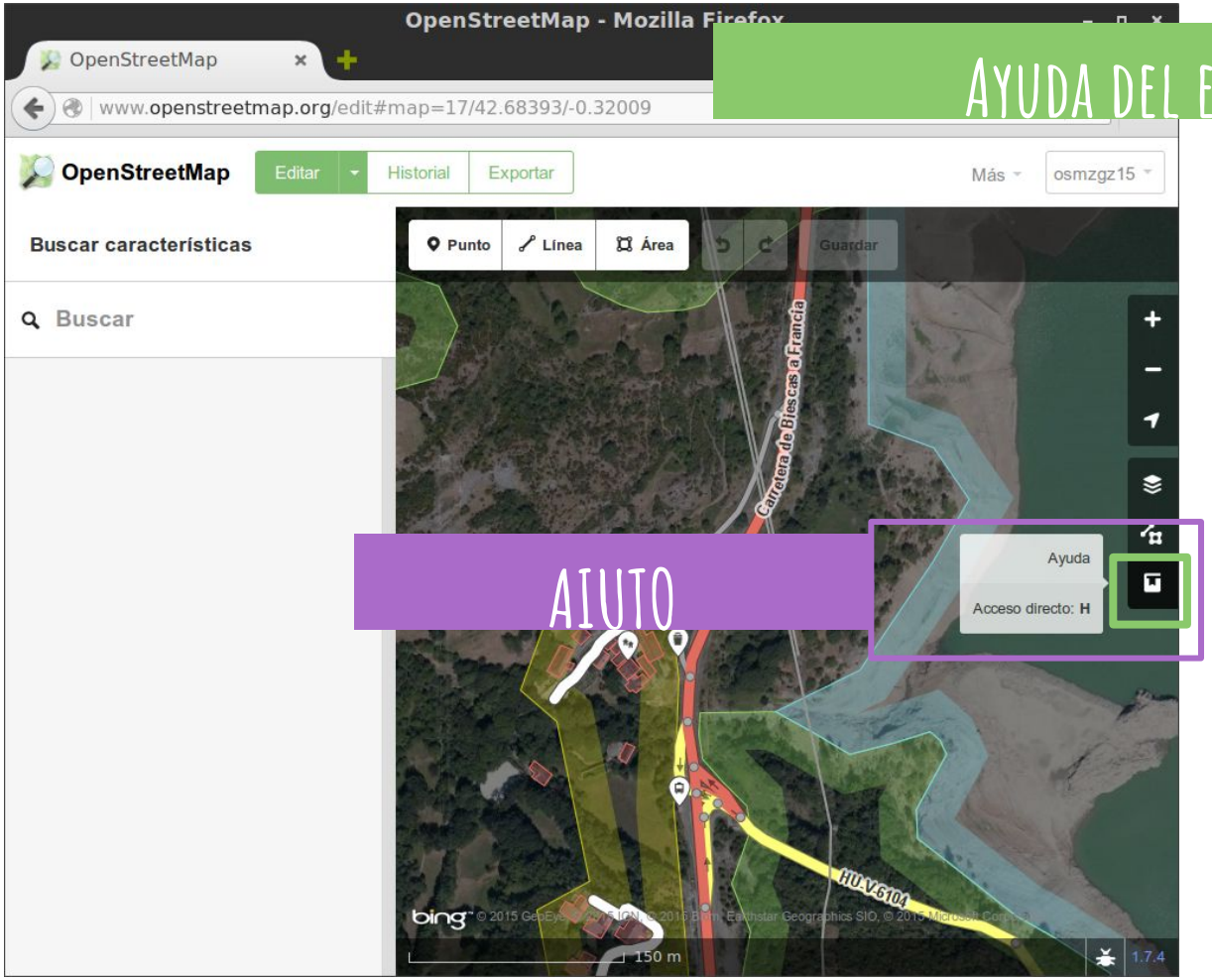
EDITOR ID



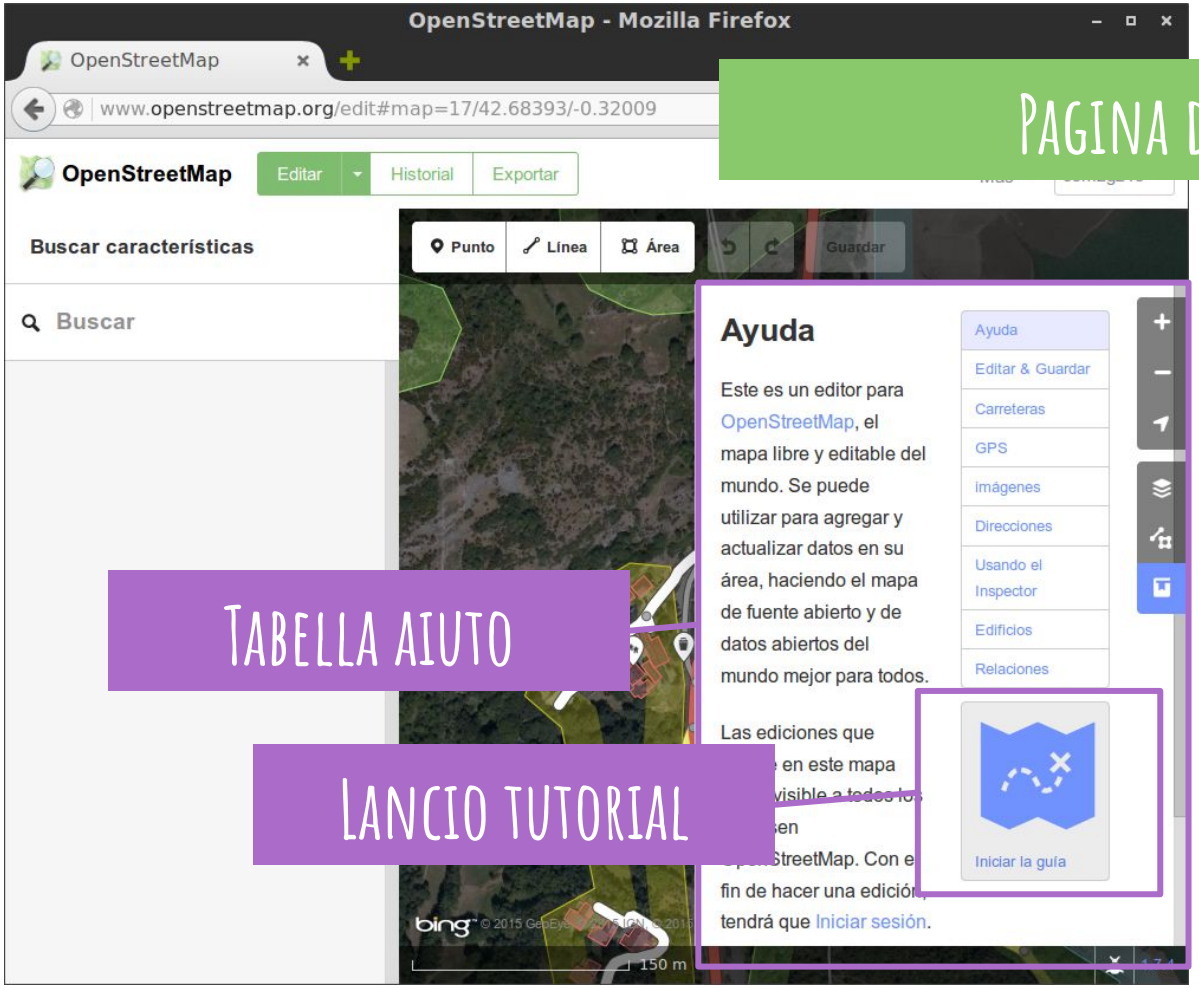
PARTE SPAZIALE

PARTE TEMATICA:
ETICHETTE

Ayuda del editor iD



AIUTO



Pagina di aiuto

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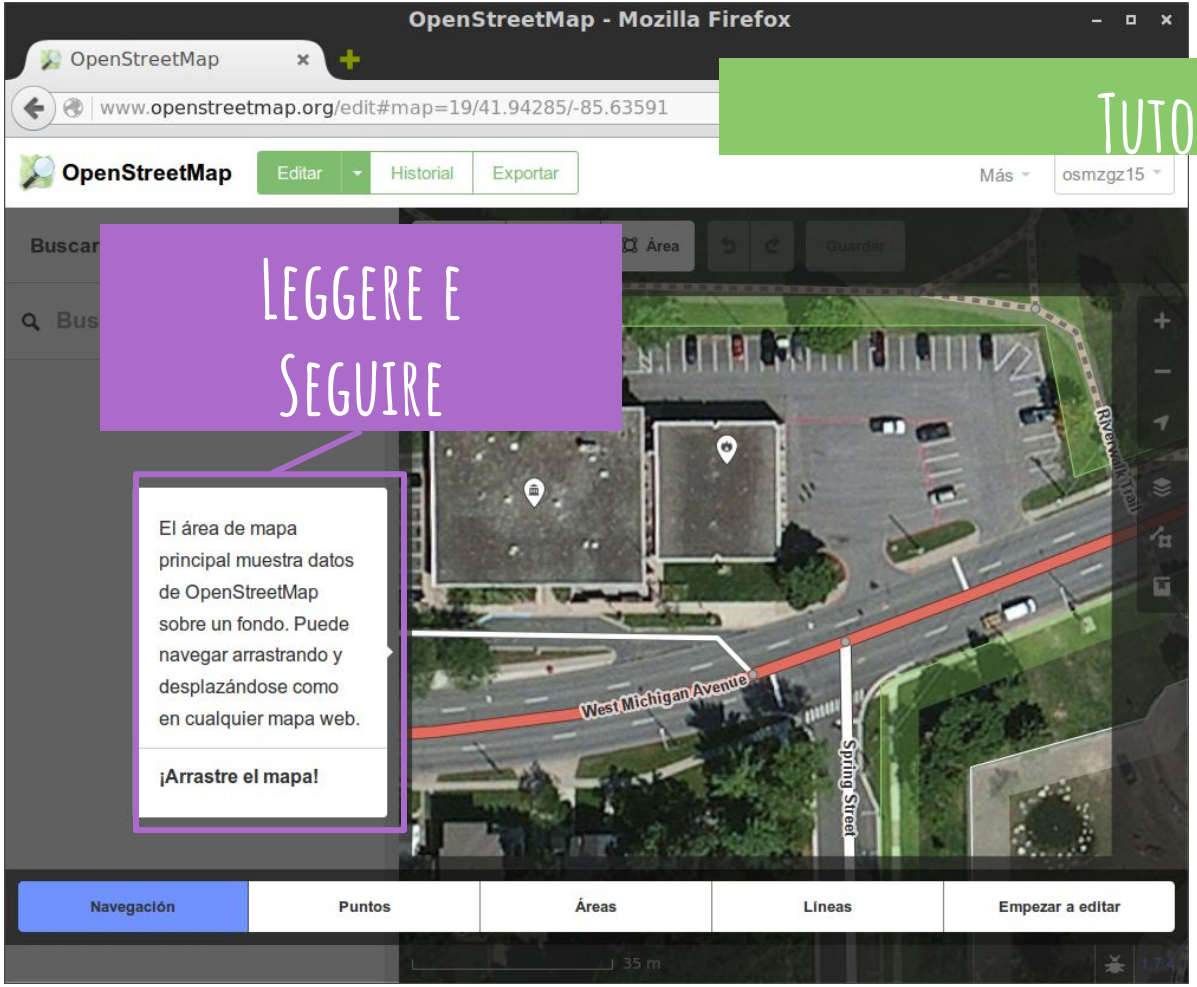
Lancio tutorial

Tutorial


OpenStreetMap - Mozilla Firefox
OpenStreetMap
www.openstreetmap.org/edit#map=19/41.94285/-85.63591
OpenStreetMap
Editar
Historial
Exportar
Más
osmzgz15
Buscar
Área
Guardar
Leggere e Seguire
El área de mapa principal muestra datos de OpenStreetMap sobre un fondo. Puede navegar arrastrando y desplazándose como en cualquier mapa web.
¡Arrastre el mapa!
West Michigan Avenue
Spring Street
Navegación
Puntos
Áreas
Líneas
Empezar a editar
35 m

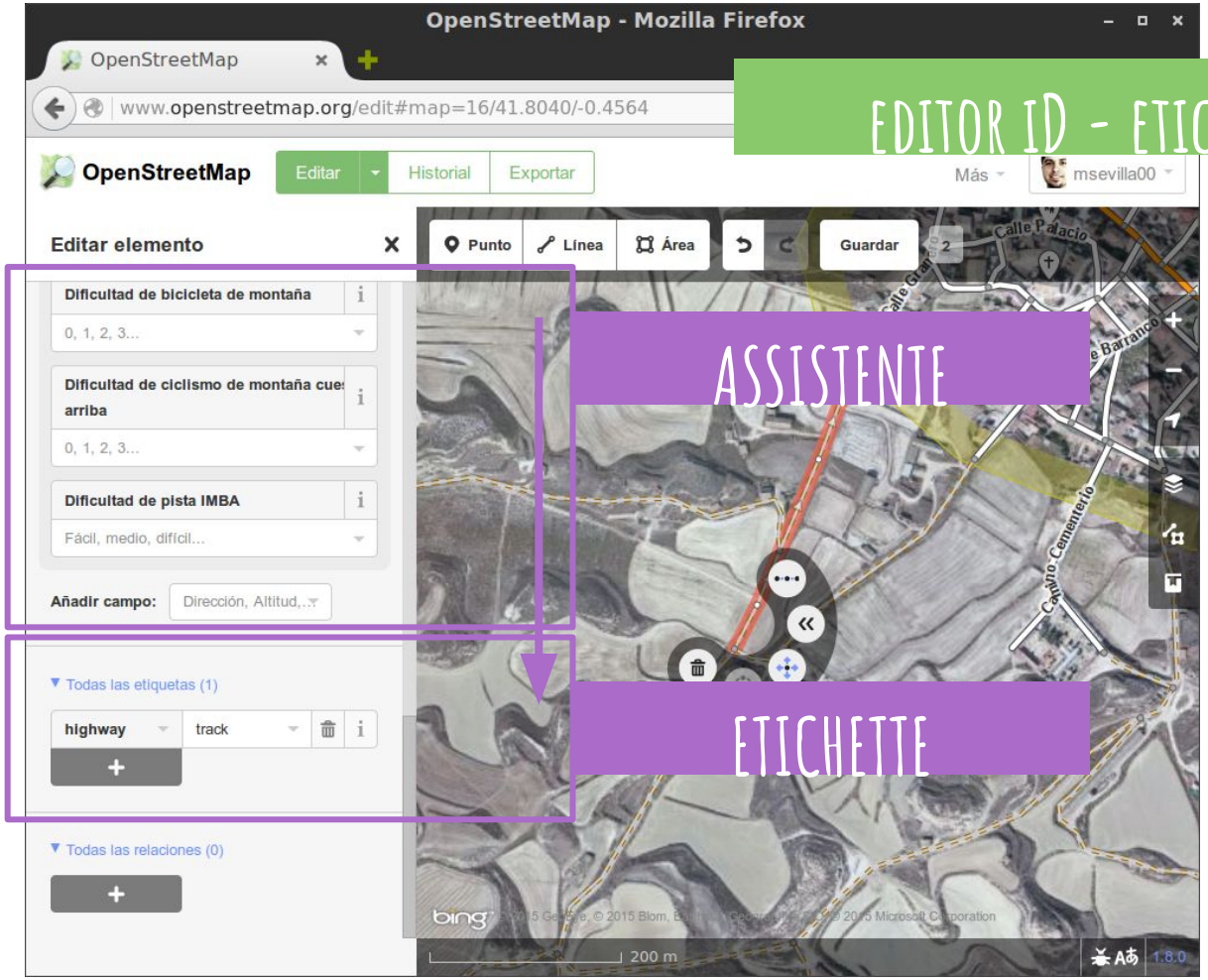
IMPORTANTE:
NON EDITARE PER IL "RENDER"

EDITOR ID - REVISIONE

1. CARICARE

2. INSERIRE COMMENTO

EDITOR ID - ETICHETTE MANUALI



ASSISTENTE

ETICHETTE

Aspetti da tenere in considerazione

- Ricorda che alcune linee possono condividere nodi
- Differenzia linee chiuse da aree (relazioni)
- Etichetta correttamente:

  wiki.osm.org/wiki/Key:etiqueta

  wiki.osm.org/wiki/Tag:etiqueta=valor
- Nel commento includi sorgente ed anno
  - source=survey;Bing source:date=2015
- Le etichette presenti sono un riferimento
  - note=* | comment=* | fixme=*

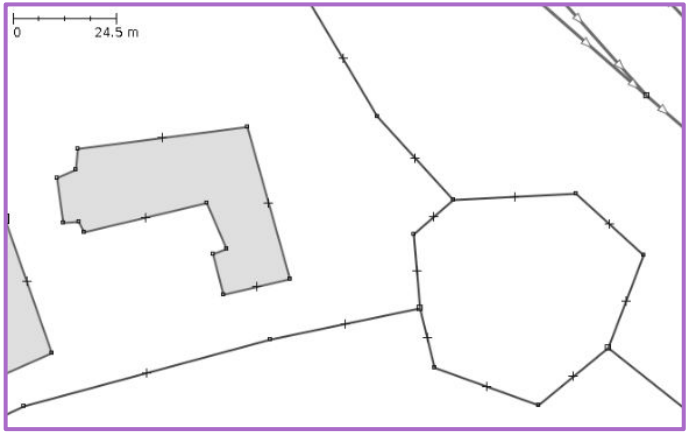
Errori frequenti

https://help.osm.org/questions/1022

- Elementi etichettati male
  - Classificazione non corretta delle vie di comunicazione highway=*
- Non commentare
- Vie non connesse -- NON includere ponti o tunnell
- Errori derivati dal ricalco da immagini satellitari
- Dimenticarsi di specificare la sorgente source=*
- Copiare da fonti NON PERMESSE (Google Maps)

ALTRI ERRORI

- Troppi nodi
- Vie non connesse
- Vie senza etichetta
- Edifici deformati



fonte: Javier Crespo http://www.openstreetmap.es/2011/10/19/resumen-jornadas-openstreetmap-deusto-2011/

La comunita' OSM e' piena di
Entusiasti pronti a dare una mano

Aiuto!

http://www.openstreetmap.org/help

wiki.osm.org riferimento fondamentale

help.osm.org riferimento per domande

list.osm.org liste di discussione

Talk-it --> Discussione italiana OpenStreetMap
Openhiking --> Lista specifica per escursionismo

Messaggi istantanei: Canale IRC o gruppo Telegram

diversi tutorial:
Guida - Wiki Beginners'_guide
LearnOSM -learnosm.org

ESTRAZIONE INFORMAZIONI

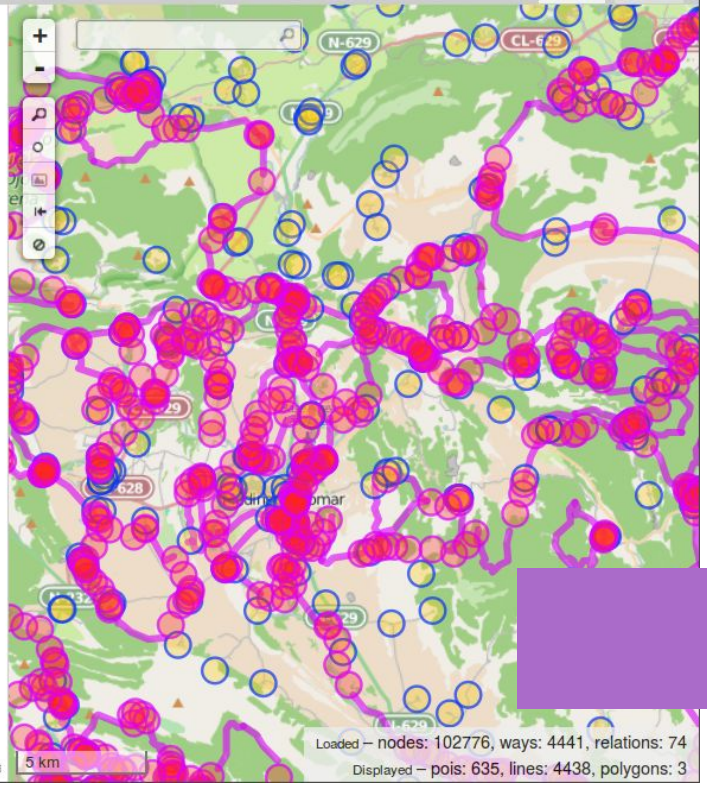
overpass turbo - Mozilla Firefox

overpass turbo

overpass-turbo.eu

Run | Share | Export | Wizard | Save | Load | Settings | Help | overpass turbo | Map | Data

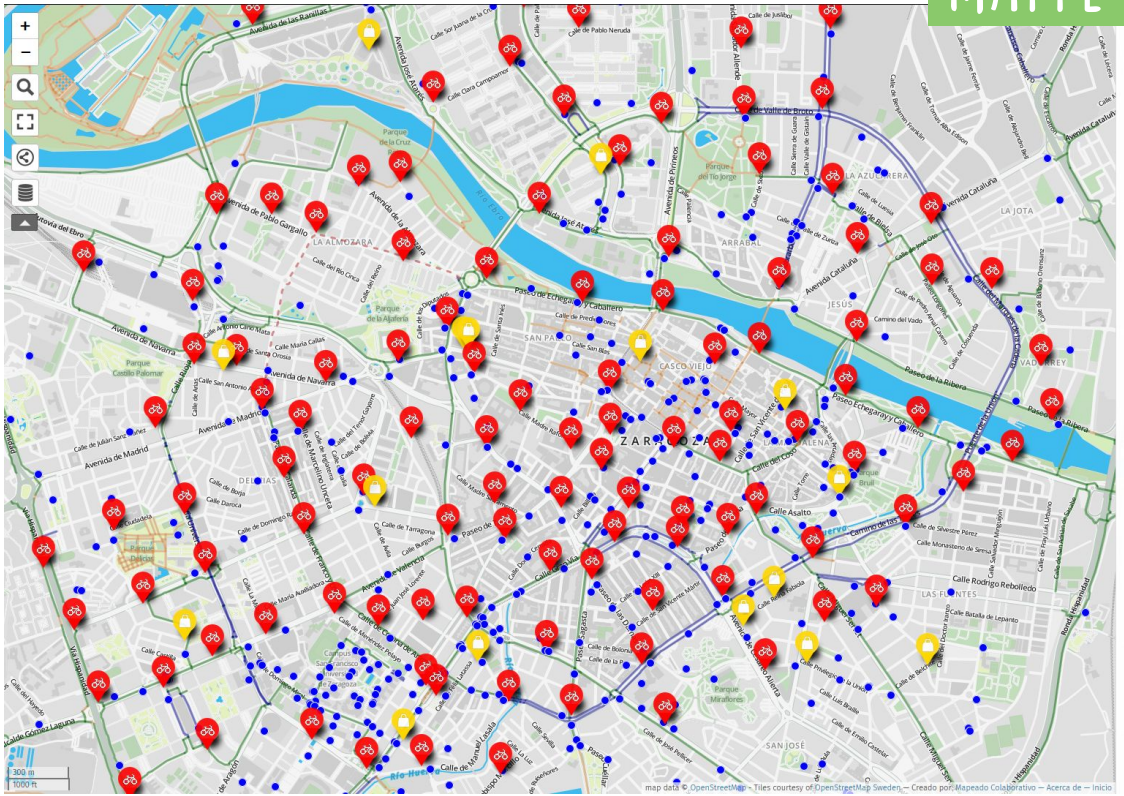
```
// consulta para los nodos de:
fuente, mapa, poste y refugio
// y las rutas cuyas relaciones son
senderos

// escrito por Oscar Zorrilla Alonso
y Miguel Sevilla-Callejo
// para comunicación en #CIMA2015

// fetch area "Las Merindades" to
search in
{{geocodeArea:"Las
Merindades"}}->.searchArea;

// nodos
node [amenity=drinking_water]
(area.searchArea); out;
node [information=map]
(area.searchArea); out;
node [information=guidepost]
(area.searchArea); out;
node [amenity=shelter]
(area.searchArea); out;

// rutas incluidas como senderos
relation [route=hiking]
(area.searchArea); (._;>;); out;

// Atención! la salida es se más de
5 Mb
```



OVERPASS API

http://overpass-turbo.eu

MAPPE TEMATICHE



#Ziclabilidad

por Robot8A

Red de infraestructuras ciclistas de Zaragoza

El mapa se actualiza cada hora.
En el menú de la izquierda se pueden cambiar las capas visibles.

Mapa creado por Mapeado Colaborativo (mapcolabora.org) tomando los datos de OpenStreetMap (openstreetmap.org), con licencia ODbL.

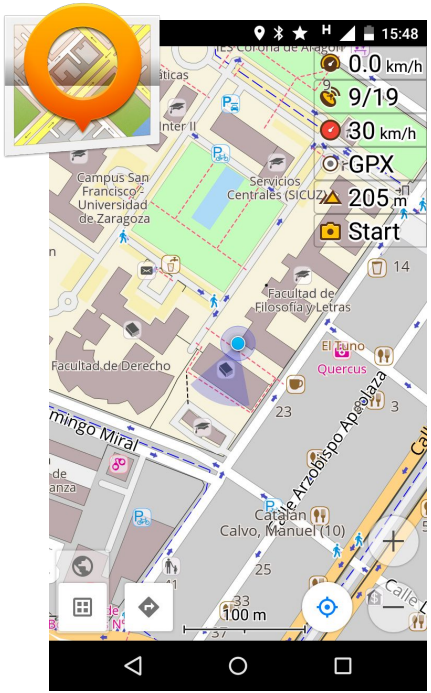
Mapeado Colaborativo

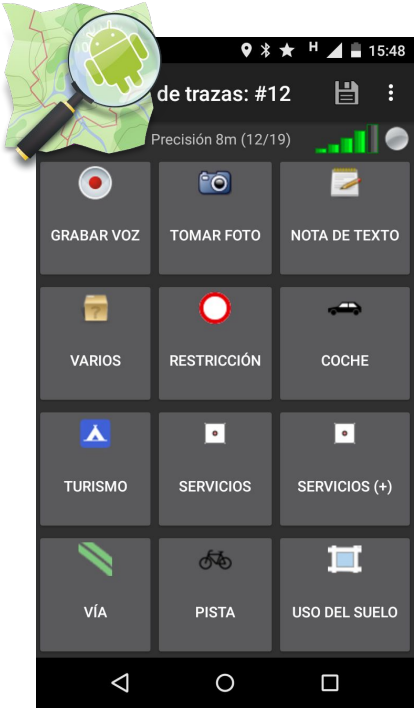
- Carriles bici en construcción o próximos a su construcción
- Vías ciclables
- Carriles bici unidireccionales
- Carriles bici bidireccionales
- Estaciones BiZi
- Estaciones BiZi (con imagen)
- Tiendas de bicicletas
- Aparcamientos de bicicletas
- Aparcamientos de bicicletas (con imagen)

Créditos

mapcolabora.org/Ziclabilidad

Apps derivate: OSMand, OSMTracker & Vespucci



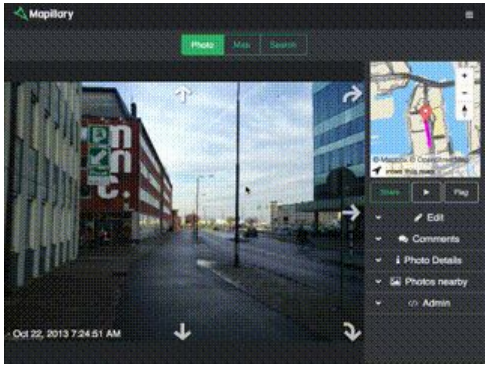


https://play.google.com/store/apps/details?id=net.osmand.plus
https://play.google.com/store/apps/details?id=me.guillaumin.android.osmtracker
https://play.google.com/store/apps/details?id=de.blau.android

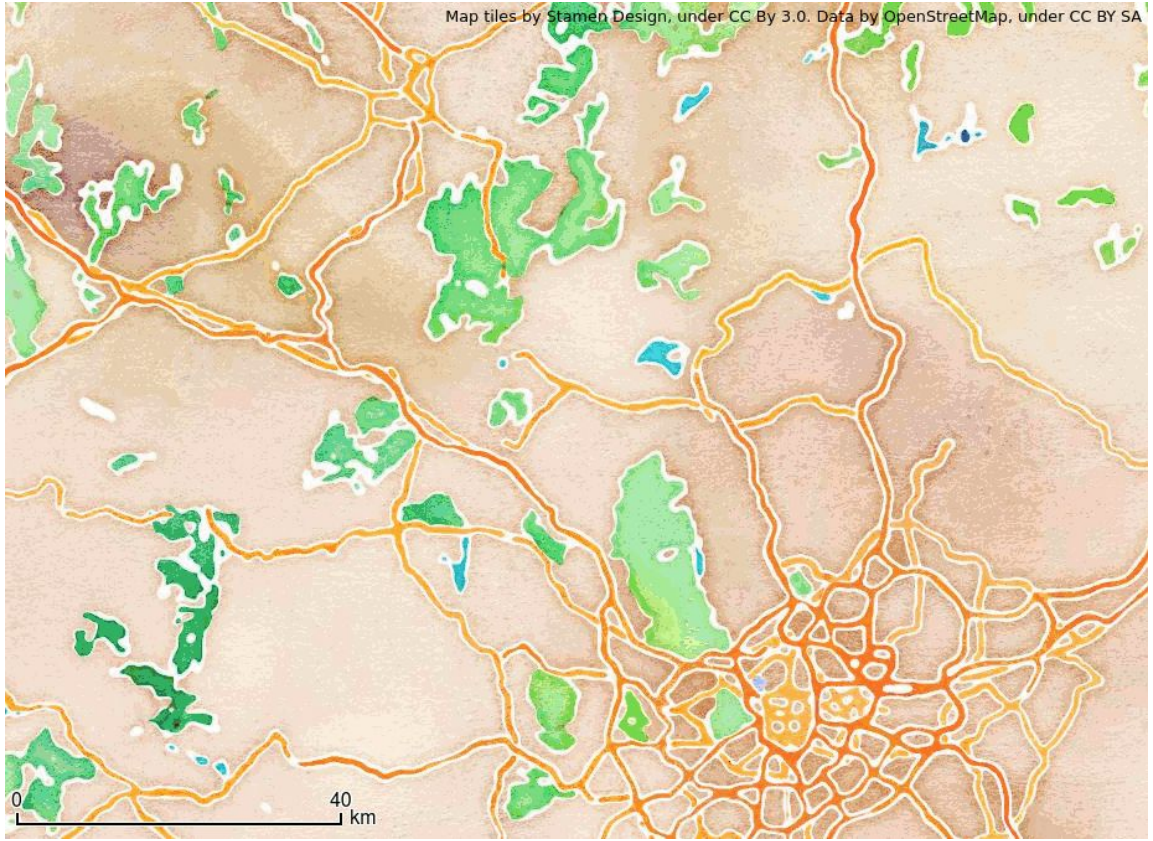
Piattaforme amiche: Mapillary

"StreetView" collaborativo
https://www.mapillary.com/

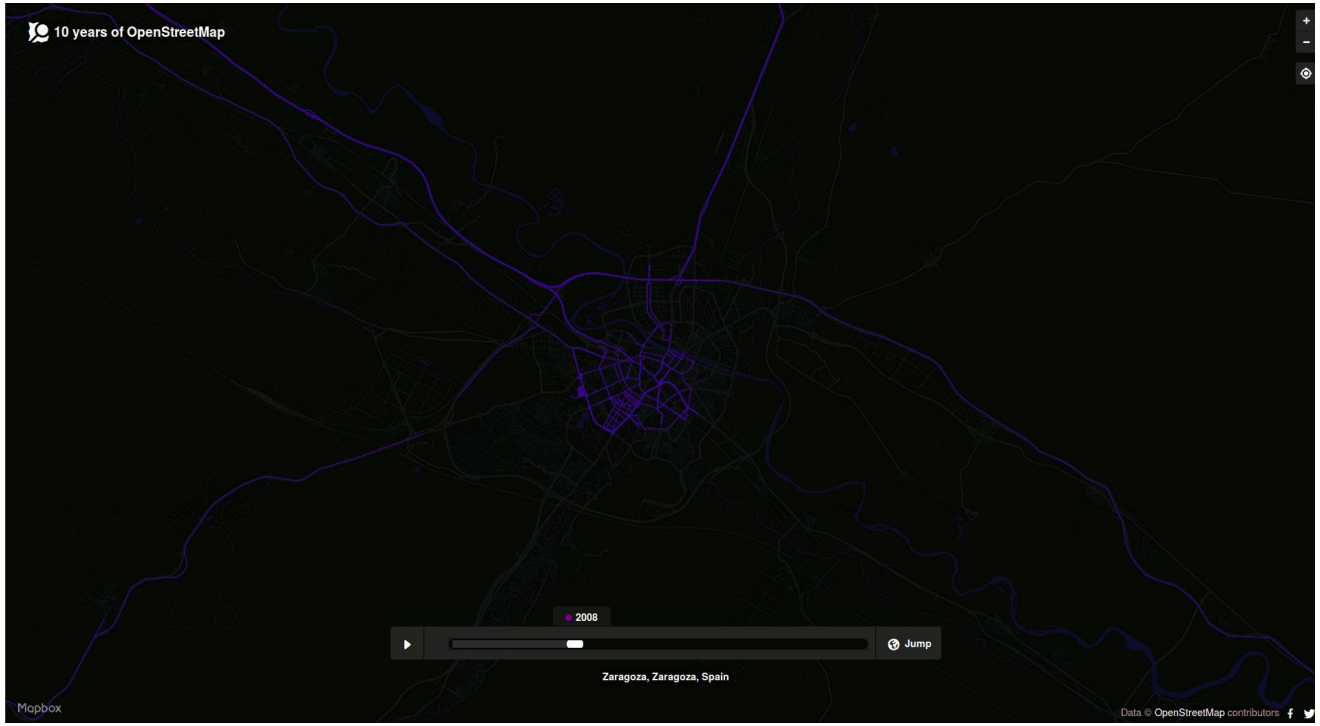
- Registra le foto via App
- Condividi le viste
- Naviga per il mondo
- Migliora OpenStreetMap



OpenStreetMap NON e' solo OSM.org, ma molto di piu'...



Zaragoza --> 2008-2015



https://www.mapbox.com/ten-years-openstreetmap/#-0.883155/41.653836/14

OpenStreetMap

CC-by-SA www.itoworld.com
Map data www.openstreetmap.org 31 Dec 2011

GRAZIE!

ALESSANDRO.FRIGERI@INAF.IT

PRESENTAZIONE CC BY-SA 2021

ADATTATA DAL LAVORO DI MIGUEL SEVILLA-CALLEJO, HÉCTOR OCHOA, ALEJANDRO SUÁREZ CEBRIÁN, CARLOS CÁMARA MENOYO & COMUNITA' OSM-ES

LINK PER ESERCITAZIONI

https://tinyurl.com/LaSapienza2023