

# Editing farm

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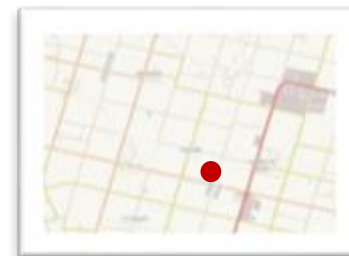
# Overview

- Spatial representation of a farm
- How to georeference a farm?
- Geocoding
- Direct method
- Indirect method

# Spatial representation of a farm

**Point** = The simplest data type

- No dimension
- No width
- No length



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The most used way to represent:

- Single location
- Events at different scales

# Spatial representation of a farm



## **Abstraction process**

Described by a ISO standard

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Represent an object with dimension with a primitive **without dimension**

# Spatial representation of a farm

**Point pattern analysis**



Useful for epidemiological analysis

# How georeference a farm?

- Geocoding
- Direct
- Indirect

# Geocoding

- Direct Geocoding
- Reverse Geocoding

# Direct Geocoding

Address well formatted

*(Address, City, Province, Country)*



Spatial location

*(longitude, latitude)*

*Prato della Valle, Padua, Padua, Italy*



*(11.8765, 45.3996)*





# Reverse Geocoding

Select a point  
*(Click on the map)*



Address well formatted



*(11.8765, 45.3996)*



*Prato della Valle, Padua, Padua, Italy*



# Geocoding

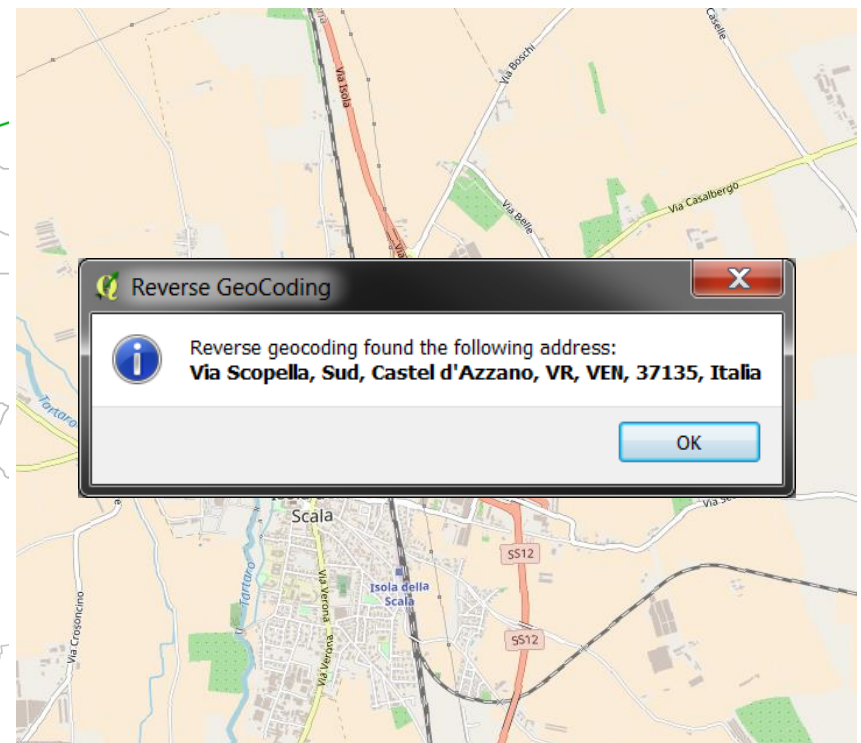
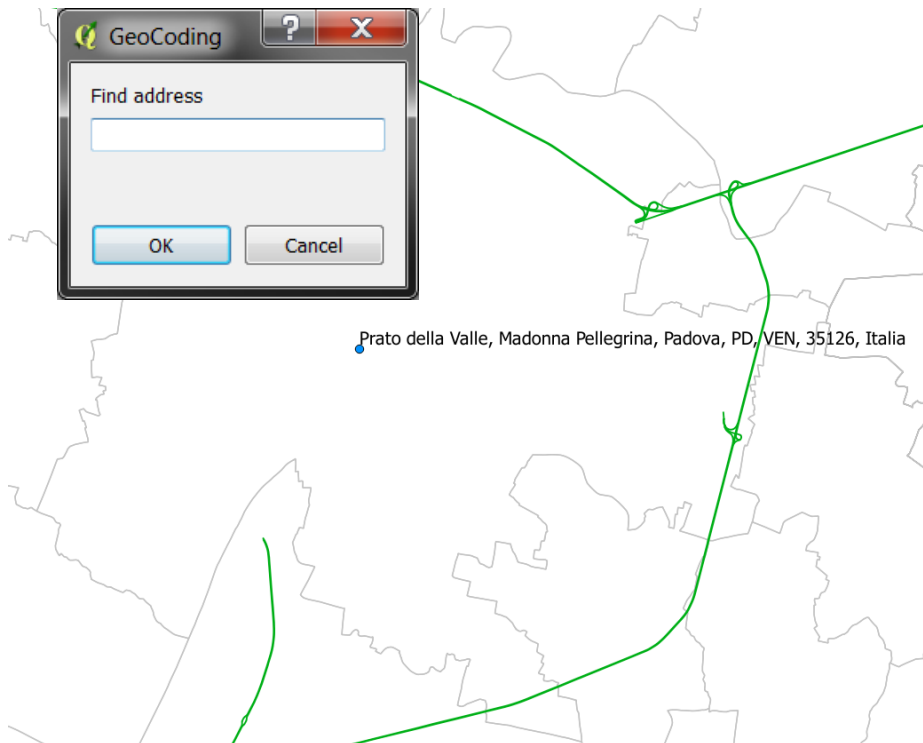
- Use external services (OSM, Google...)
    - Free of costs
    - With fees
  - Information represent an address location (on the street)
  - Processes can be automate
- 
- Information about the address are mandatory and must be formatted according the external services specification
  - Some data can be «not found» or generate errors

# Geocoding in QGIS

- GeoCoding plugin
- MMQGIS: Geocode CSV with Google/OpenStreetMap (<https://www.gislounge.com/how-to-geocode-addresses-using-qgis/>)

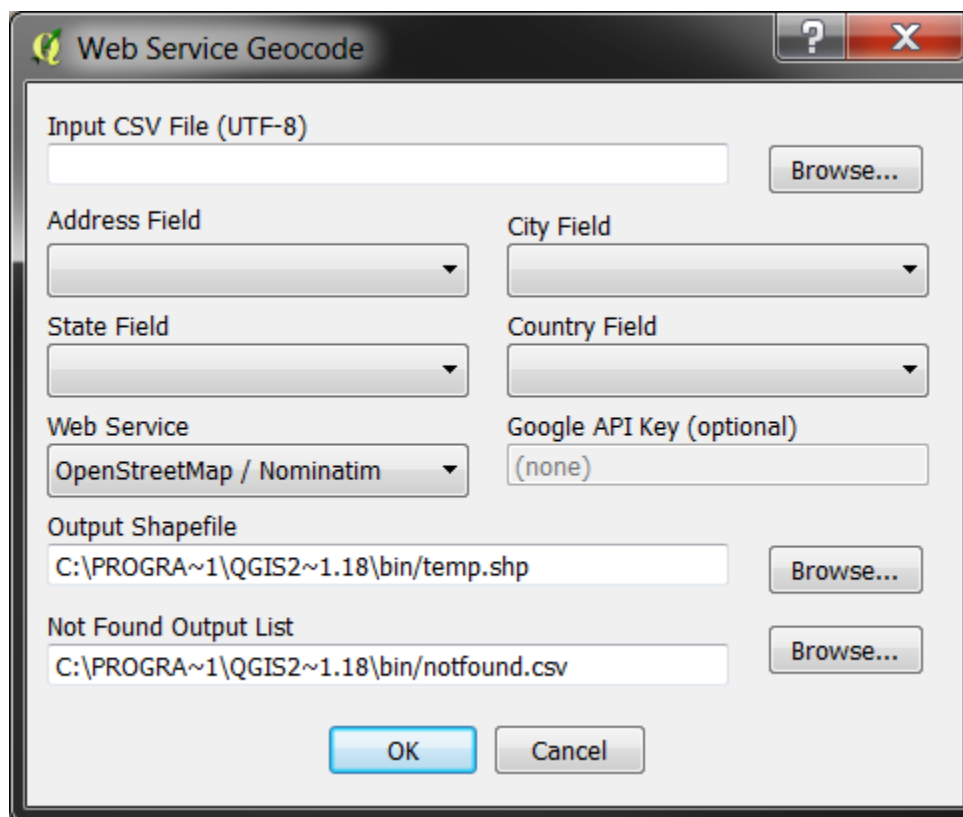
# GeoCoding plugin

- Simple (single address)
- Direct / Reverse



# MMQGIS plugin

- Complete tool for vector layers manipulation
- Direct geocoding for a list of elements (csv file)



# Direct method



GPS receiver  
*(professional)*



Smartphones  
*(for fun, but not only)*

# Direct method

## GPS

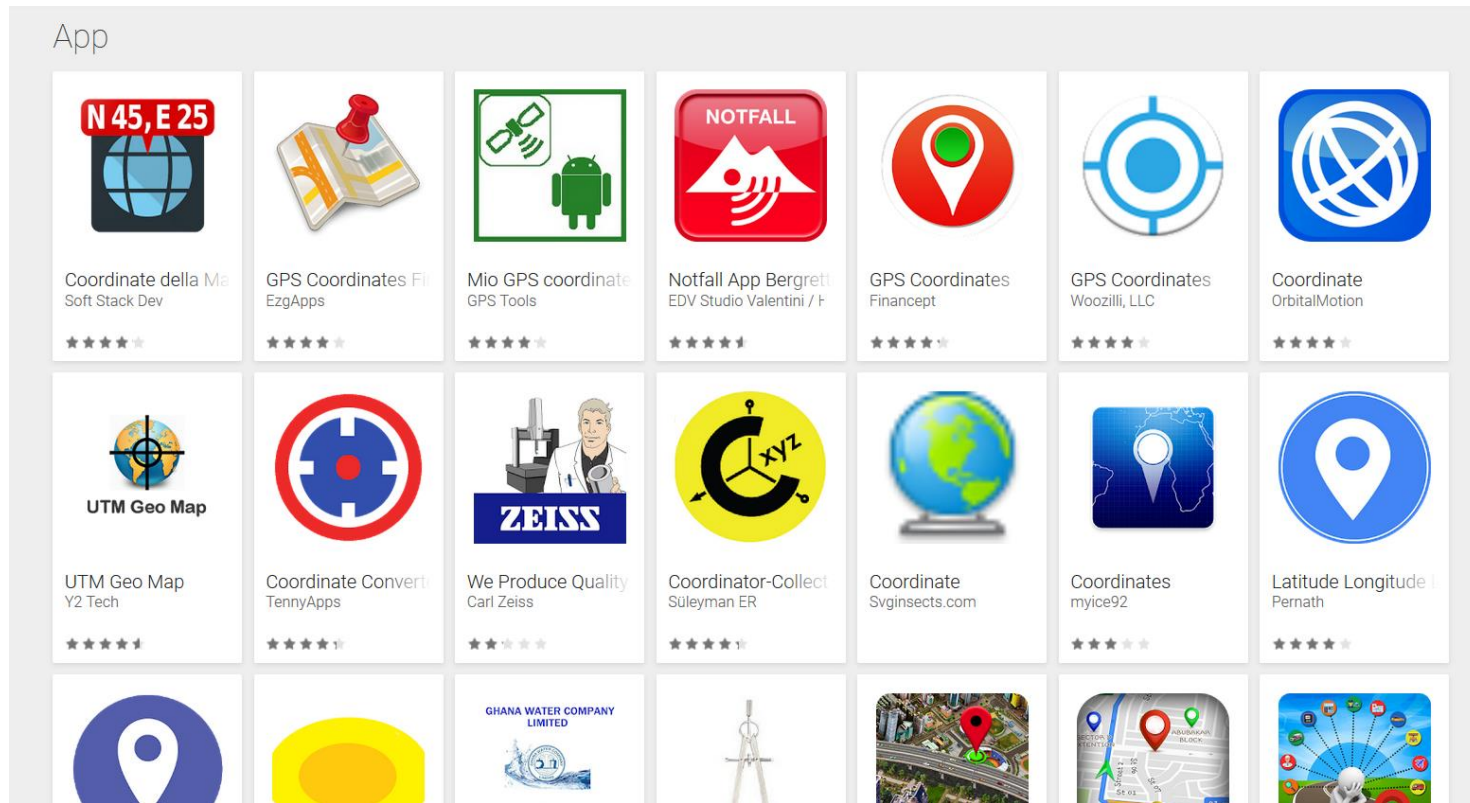
- More accurate
- More expensive
- Require the data definition (more customizable)

## Smartphone + APPs

- Less accurate
- Less expensive
- More user-friendly / simple
- Doesn't need data definition (less customizable)
- Apps are always compliant with the device
- Many apps

# Smartphone + georeference app

Using smartphones and apps you can georeference elements



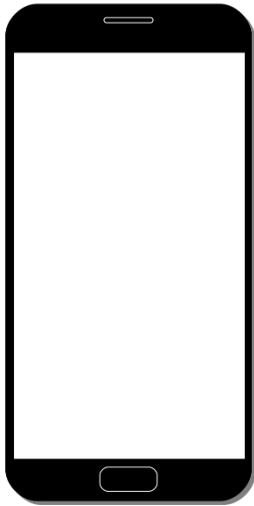


# Smartphone + georeference app

For example OSM services are used in different apps:

- [https://wiki.openstreetmap.org/wiki/Apple\\_iOS](https://wiki.openstreetmap.org/wiki/Apple_iOS)
- <https://wiki.openstreetmap.org/wiki/Android>

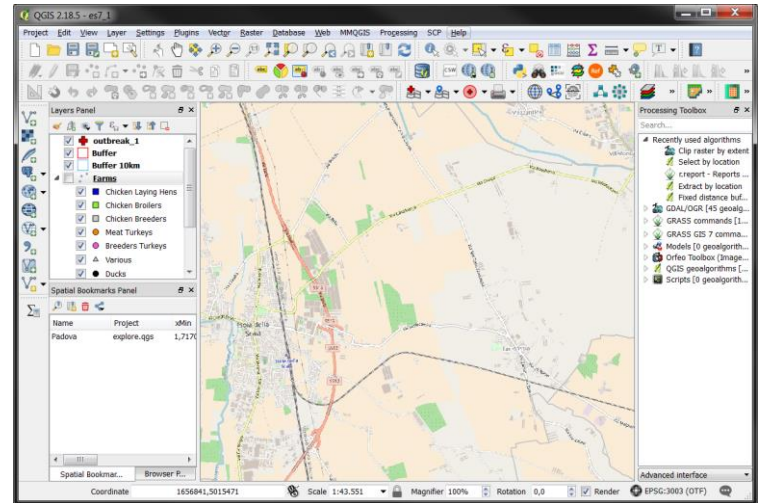
# Common framework



Text file

.csv

.gpx



Create spatial data from text file

*Import csv/gpx +*

*Display data +*

*Export to spatial format*

Data capture  
*GPS Rec + Sw*  
*Device + App*

# Indirect method

**Centroid** = Spatial representation

- building
- the polygon that contain the building (usually for huge farms)

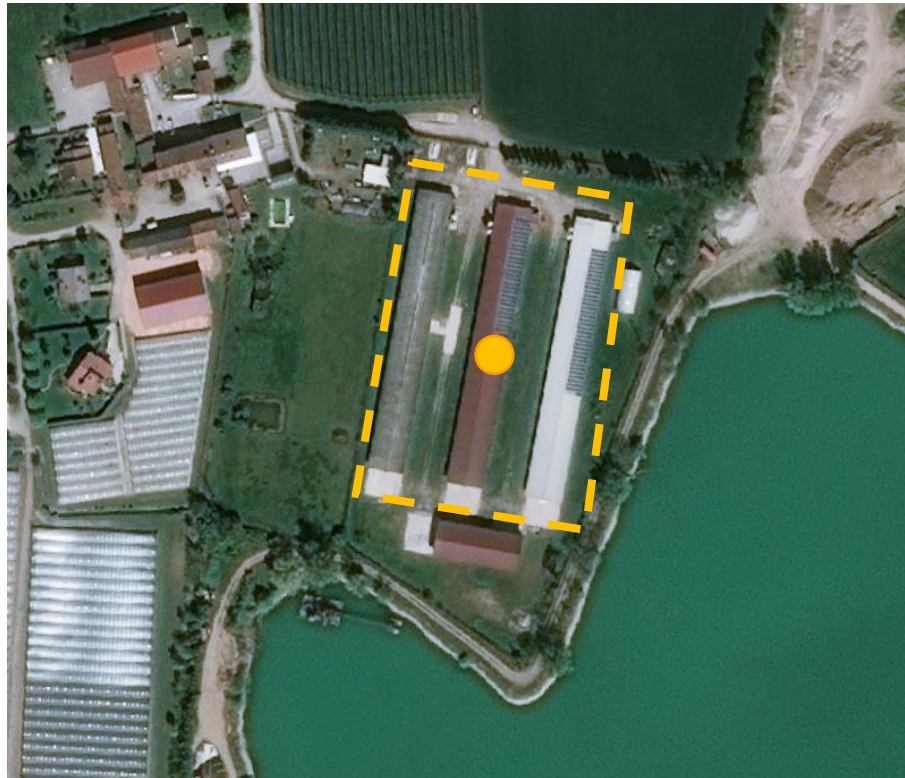


# Indirect method

- Basemap layer that represent the real environment (i.e.: satellite images)
- GIS to edit spatial data (i.e.: QGIS)
- Properly scale of work definition
- Properly CRS definition

# Indirect method

- Definition of the entity to be georeferenced
- Set to the right scale (1:5000)
- Identification of the structure: buildings, backyard...
- Capture the location using point placed in the centroid



# Practical exercise

- Georeference farms using **geocoding**
- Georeference farms using **indirect method**