Data acquisition

OIE Collaboration project

Workshop

OIE Collaborating Centre for epidemiology, training and control of emerging avian diseases

OIE Headquarters

Data acquisition

Geographic data acquisition

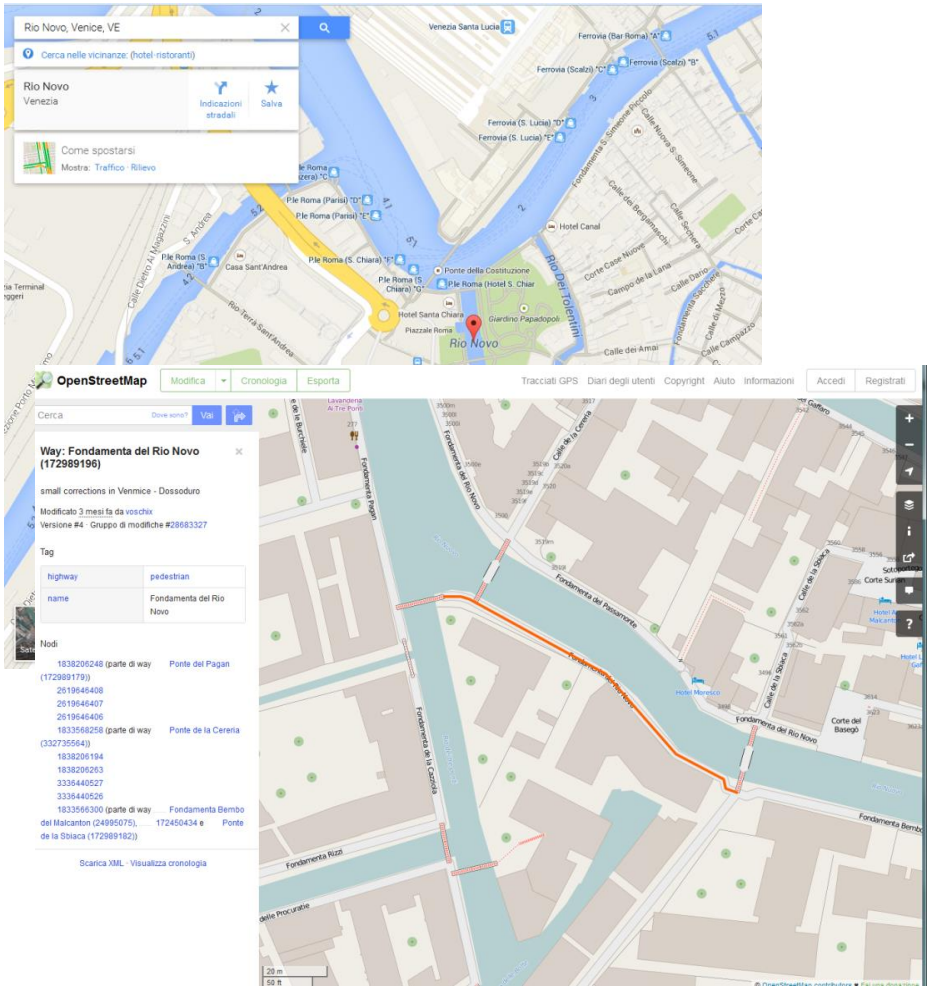
- Geocoding (*gazetteer)*
- Georeferencing
  - Direct (GPS)
  - Indirect (Web GIS)

Geocoding

Geocoding is the process of finding associated geographic coordinates from other geographic data, such as street addresses, or zip codes (postal codes). With geographic coordinates the features can be mapped and entered into a GIS.

- Using application with GUI (Graphyc User interface)
- Using API (Application Programming Interface)
  - Open Street Map API
  - Google Map API

Provider application with GUI



PRO'S:

- Very simple – User interface
- For free

CON'S:

- Single request
- Need a human operator

bing Maps

Geocoding with API


```
−<GeocodeResponse>
   <status>OK</status>
  −<result>
     <type>route</type>
     <formatted_address>Piazza, 6537 Grono, Svizzera</formatted_address>
    −<address_component>
       <long_name>Piazza</long_name>
       <short_name>Piazza</short_name>
       <type>route</type>
     </address_component>
    −<address_component>
       <long_name>Grono</long_name>
       <short_name>Grono</short_name>
       <type>locality</type>
       <type>political</type>
     </address_component>
    −<address_component>
       <long_name>Moesa</long_name>
       <short_name>Moesa</short_name>
       <type>administrative_area_level_2</type>
       <type>political</type>
     </address_component>
    −<address_component>
       <long_name>Grigioni</long_name>
       <short_name>GR</short_name>
       <type>administrative_area_level_1</type>
       <type>political</type>
     </address_component>
    −<address_component>
       <long_name>Svizzera</long_name>
       <short_name>CH</short_name>
       <type>country</type>
       <type>political</type>
     </address_component>
    −<address_component>
       <long_name>6537</long_name>
       <short_name>6537</short_name>
       <type>postal_code</type>
     </address_component>
    −<geometry>
      −<location>
         <lat>46.2474769</lat>
         <lng>9.1453916</lng>
```


PRO'S:

- Multiple requests
- Automate operations

CON'S:

- Commercial (depending on number)
- Knowledge of specific API
- Development of specific software

Geocoding with API

Providers

http://www.programmableweb.com/news/56-geocoding-apis-geocoder-google-and-maplarge/2012/07/25

Geocoding with API

Code Example

```
[...]

OCIExecute($stmt);
for ($i = 0; $i <= 8 && (OCIFetchInto($stmt, $r_sel, OCI_ASSOC+OCI_RETURN_NULLS)); $i++)
{
    [...]

    $url = "http://maps.googleapis.com/maps/api/geocode/xml?address=".$STR4GOOGLE."&sensor=false";

    $page = utf8_encode(file_get_contents($url));
    $xml = new SimpleXMLElement($page);

    [...]

    $longitude = str_replace('.', ',', $xml->result->geometry->location->lng);
    $latitude = str_replace('.', ',', $xml->result->geometry->location->lat);

    [...]

}

[...]
```

Part of PHP code for Geocoding (POINTS)

Geocoding

STRENGTHS

- Fast data collection
- Reasonable costs

WEAKNESSES

- Scarce positional accuracy
- [require a validation]

Georeferencing Direct - GPS

With the GPS you can locate a position or collect an accurate set of spatial entities along with their attributes.

GPS

Activities:

1. survey organization
2. data collection
3. post processing (in the office)

Organise the survey

- Define the spatial entities to collect
- Define, for each spatial entity, its representation (point, line, polygon)
- For each spatial point define the set of attributes to collect
- Produce a check list

Data collection

1. Study the location
2. Reach the location
3. Store the GPS coordinate
4. Check the point in the map
5. Input of the descriptive data

GPS – post processing

- Download the collected points and data
- Verify, by means of a GIS the accuracy of collected data.
- In case of scarce accuracy, a second field survey will be necessary. This time the survey can be supported by some topographic maps were write the point sequence and its approximate location.

Spatial entities – an example

Marlene Mueller

Georeferencing - Direct

STRENGHTS

- Good positional accuracy
- Highest attribute accuracy

WEAKNESSES

- High costs (for a high number of farms)
- Difficult to keep maintained

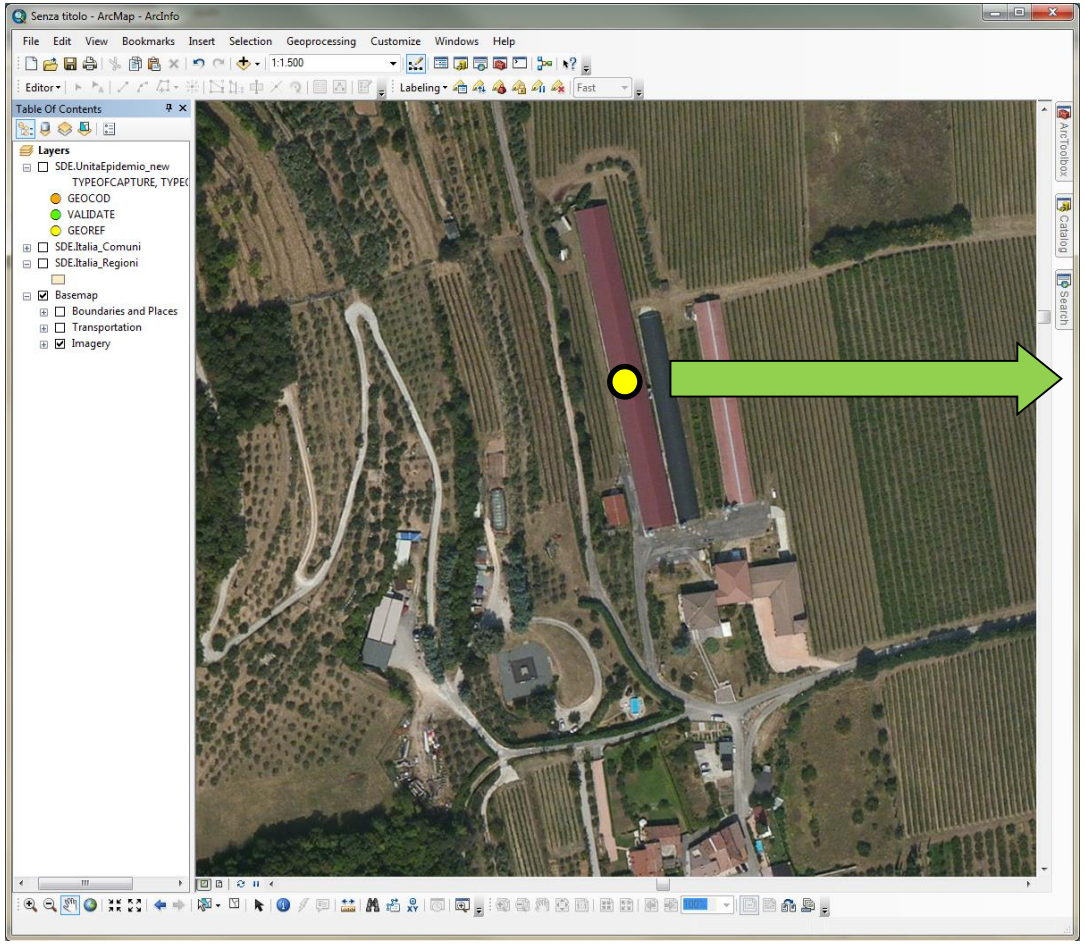
Georeferencing - Indirect

The indirect methods are based on an existing maps: the spatial entity are recognized on the map and its geographical information are automatically extracted.

Using GIS software

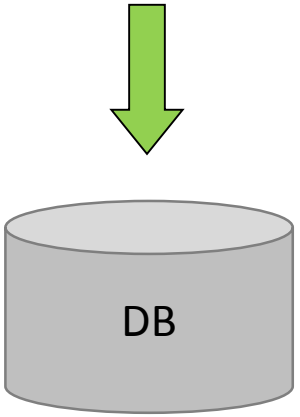
- WebGIS
- Desktop

Georeferencing - Indirect



ID: **001PD001**

lat: 46°22′01″ – *lon*: 05°33′21″



Georeferencing - Indirect

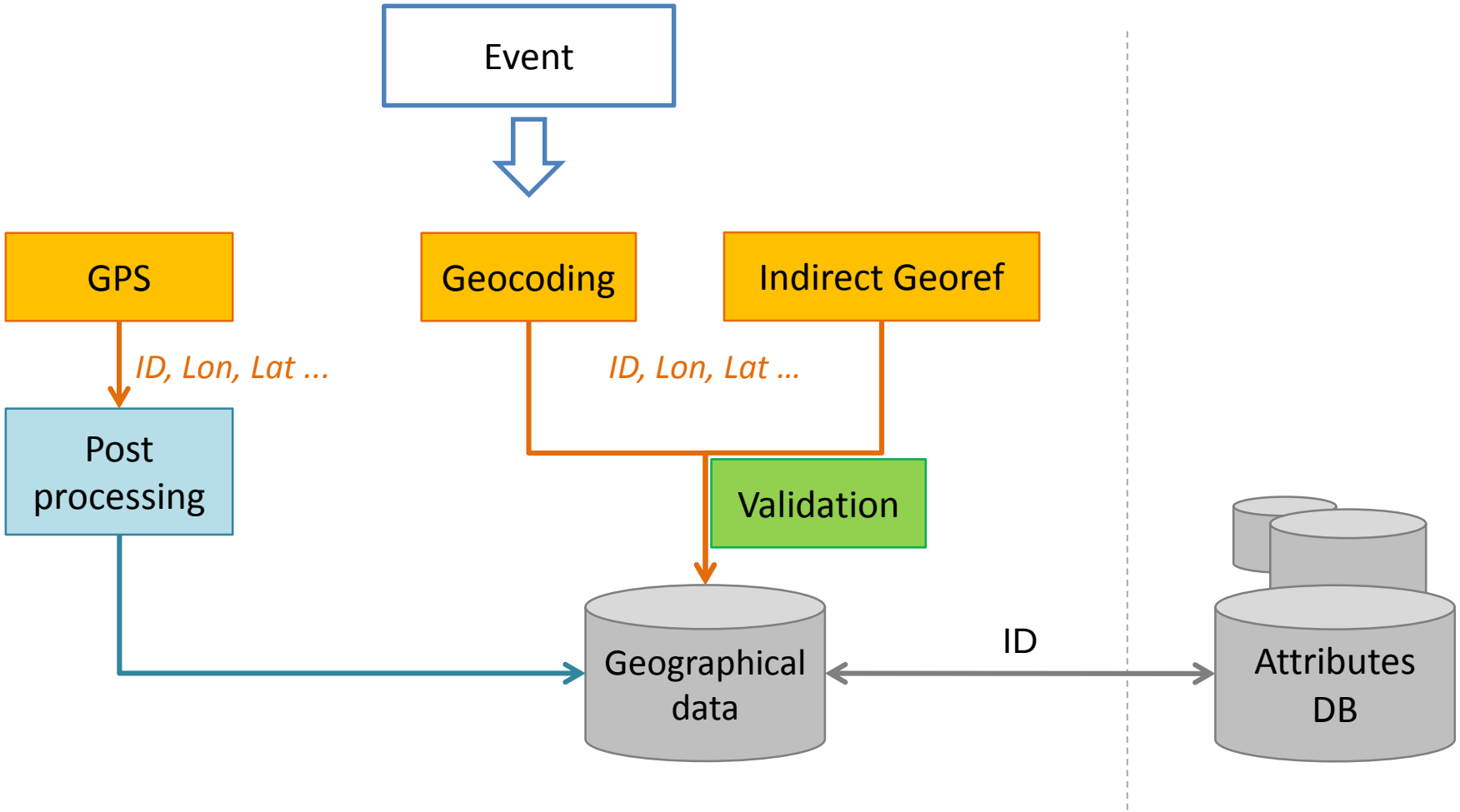
STRENGHTS

- Easy to use
- Low costs
- Easy to distribute

WEAKNESSES

- Photo interpretation (understand element on the field)
- Require updated basemap
- [Require a validation]

Data acquisition



Thanks for attention!