LEAFLET.*js* : from ZERO to HERO

Special guests:

Lo Stretto Digitale

#ODS16 - Summer Edition - Messina, 03/09/2016

@opendatasicilia - @strettodigitale


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http://agafonkin.com/en/
WebGL
jQuery
JS
Lo
Leaflet

GIUSEPPE PIZZIMENTI

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https://github.com/gpizzimenti

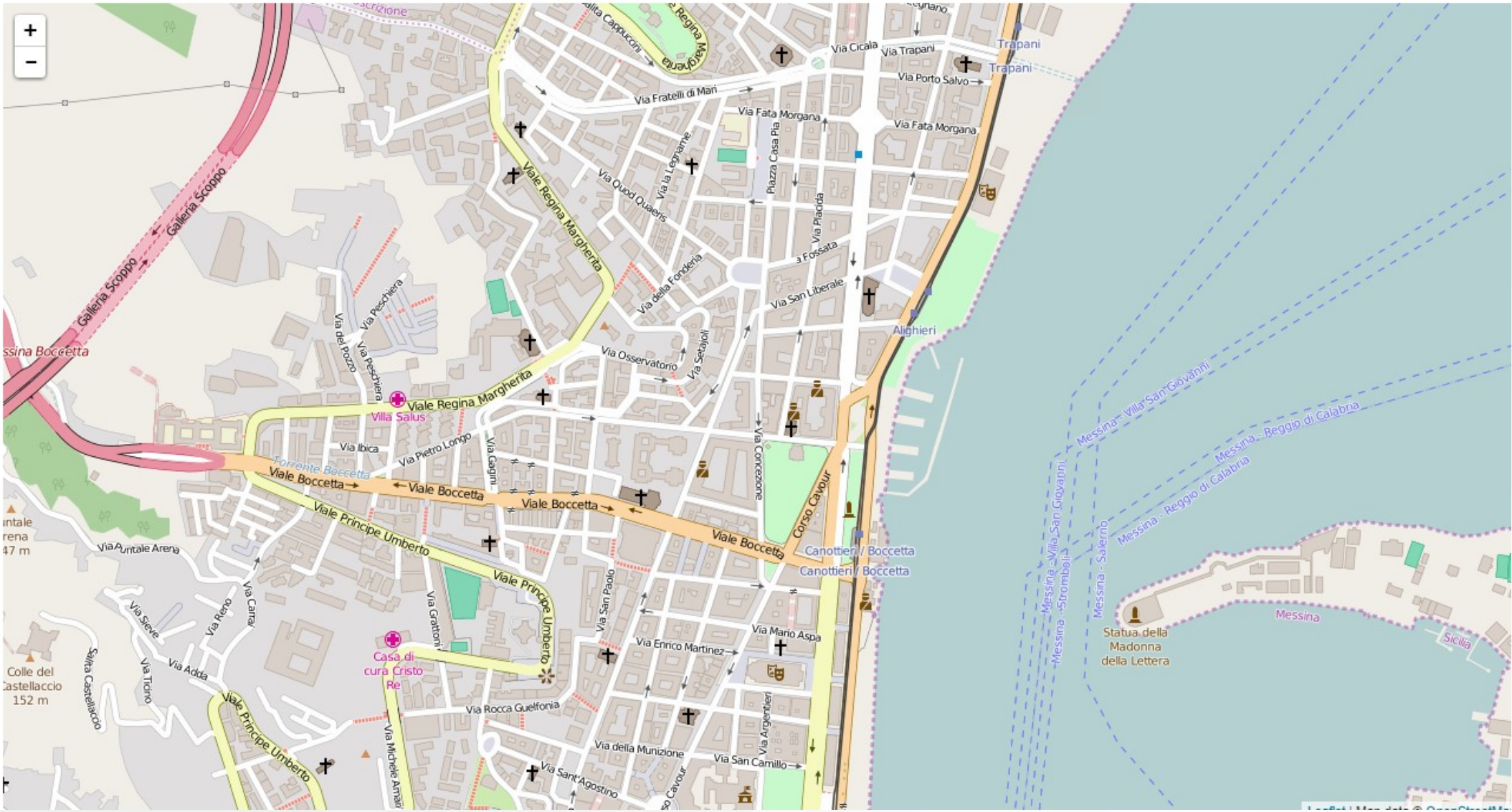
http://leafletjs.com/

Es. 1 – Le componenti di base

```
<html>

 <head>
    <title>#ODS16 | Leaflet</title>
     <meta charset="utf-8" />

    <link rel="stylesheet" href="https://npmcdn.com/leaflet@0.7.7/dist/leaflet.css" />

    <script src="https://npmcdn.com/leaflet@0.7.7/dist/leaflet.js"></script>

 </head>

 <body>

    <div id="mapContainer" style="width: 100%; height: 100%"></div>

 </body>

</html>
```

Es. 2 – Il Tile Layer

```
<div id="mapContainer" style="width: 100%; height: 100%"></div>


<script>
var mappa = L
            .map('mapContainer')
            .setView([38.19941,15.55602], 16); // LAT, LONG



           L
            .tileLayer(
                'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
                {
                    attribution: 'Map data &copy; <a
href="http://openstreetmap.org">OpenStreetMap</a>',
                    maxZoom: 20
                }
            )
            .addTo(mappa);

</script>
```

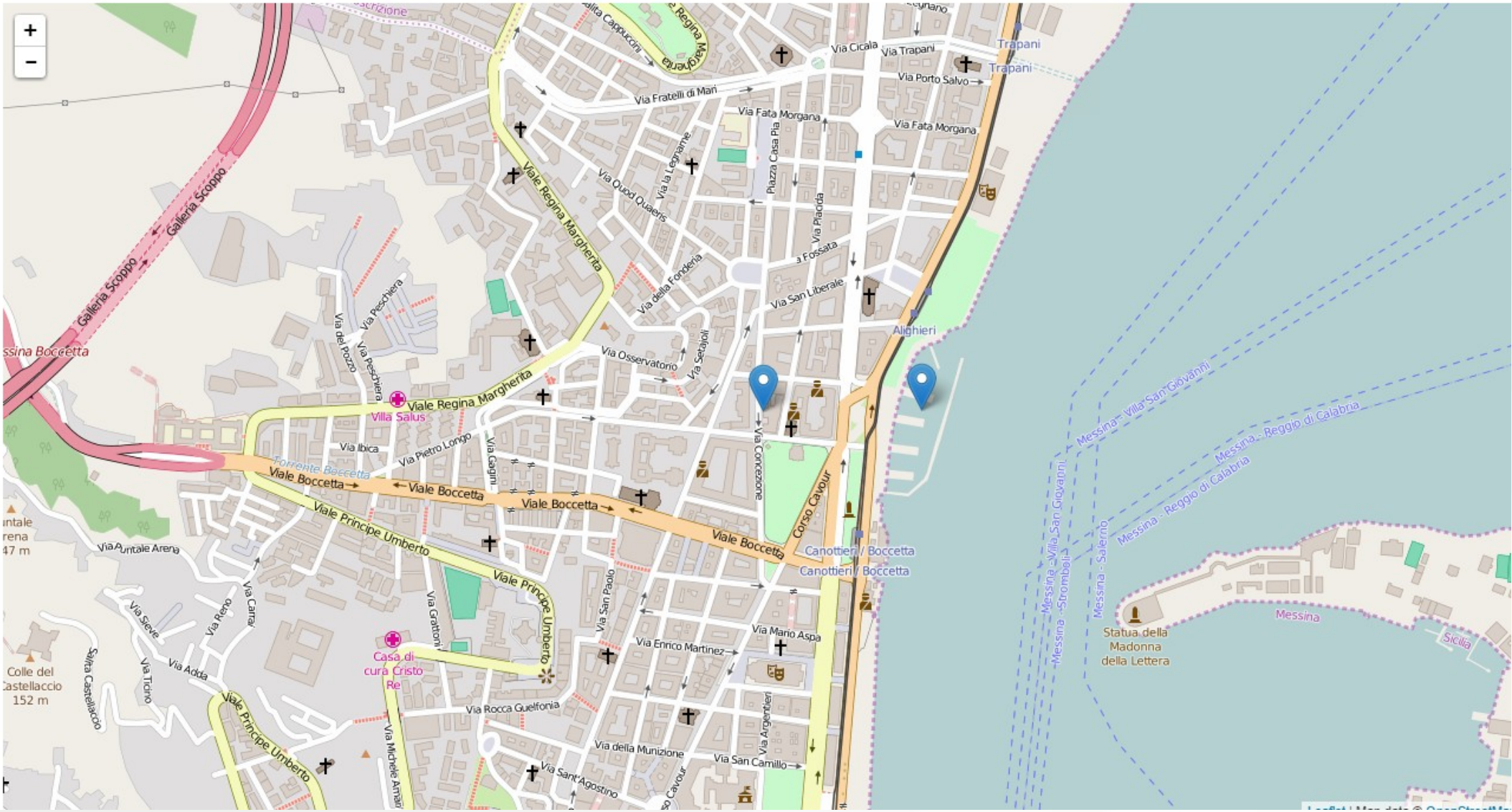

Galleria Scoppo
Viale Regina Margherita
Villa Salus
Viale Boccetta
Torrente Boccetta
Viale Principe Umberto
Via Puntale Arena
Via Ibica
Via Pietro Longo
Via Gagini
Via Pescheria
Via del Pozzo
Via Osservatorio
Via Setaioli
Via della Fonderia
Via Quod Quaeris
Via la Legname
Via Fratelli di Mari
Via Fata Morgana
Piazza Casa Pia
Via Cicala
Via Trapani
Via Porto Salvo
Trapani
Via Piaida
a Fossata
Via San Liberale
Alighieri
Via Concezione
Corso Cavour
Canottieri / Boccetta
Via Enrico Martinez
Via Mario Aspa
Via San Paolo
Via Gattoni
Via Rocca Guelfonia
Via della Munizione
Via San Camillo
Via Argentieri
Via Sant'Agostino
Via Michele Amari
Casa di cura Cristo Re
Via Reno
Via Carrai
Via Sieve
Via Adda
Via Ticino
Salita Castellaccio
Colle del Castellaccio 152 m
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Salerno
Messina - Stromboli
Messina
Statua della Madonna della Lettera
Sicilia

Es. 3 – Markers

```
<script>
var mappa = L
                .map('mapContainer')
                .setView([38.19941,15.55602], 16); // LAT, LONG


            L
                .tileLayer(
                      'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
                {
                            attribution: 'Map data &copy; <a           href="http://openstreetmap.org">OpenStreetMap</a>',
                            maxZoom: 20,
                      }
                )
            .addTo(mappa);
```

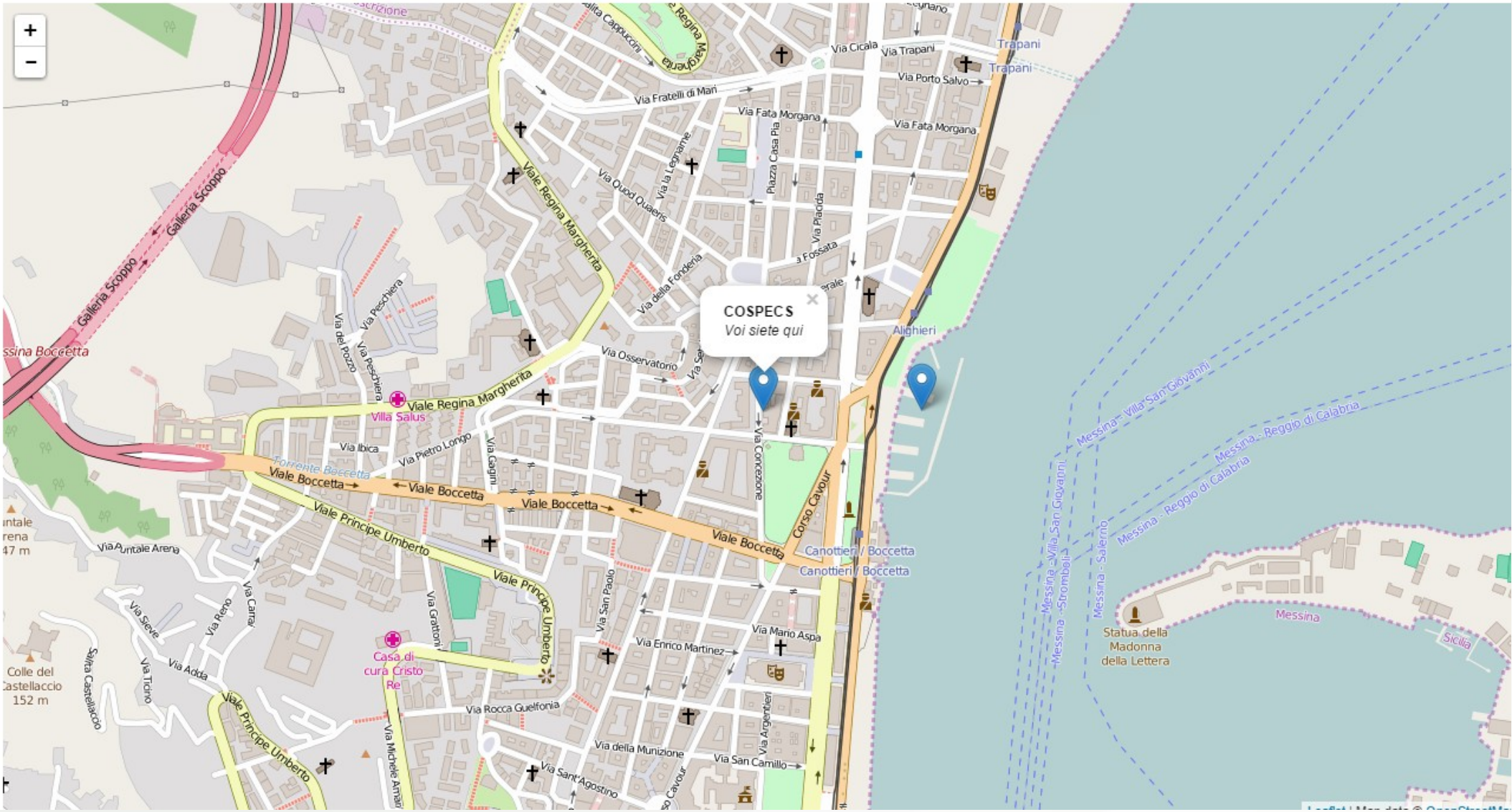
```
var markerCospecs = L.marker([38.19941,15.55602])
                     .addTo(mappa);

var markerMarina = L.marker([38.19943,15.55889])
                     .addTo(mappa);
```

```
</script>
```


Galleria Scoppo
Viale Regina Margherita
Villa Salus
Viale Boccetta
Viale Principe Umberto
Via Pietro Longo
Via Ibica
Via Puntale Arena
Via Rocca Guelfonia
Via della Munizione
Via Sant'Agostino
Via San Camillo
Via Enrico Martinez
Via Mario Aspa
Via San Paolo
Via Gratton
Via Michele Amari
Via Adda
Via Ticino
Via Reno
Via Carrai
Via Sieve
Via Argentieri
Via Fratelli di Mari
Via Fata Morgana
Via Cicala
Via Trapani
Via Porto Salvo
Via Quod Quaeris
Via la Legname
Via della Fonderia
Via Osservatorio
Via Setaioli
Via San Liberale
Via Fossata
Via Pescheria
Via del Pozzo
Via Gagini
Via Coronazione
Corso Cavour
Piazza Casa Pia
Via Piaida
Trapani
Alighieri
Canottieri / Boccetta
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Salerno
Messina - Stromboli
Messina
Sicilia
Statua della Madonna della Lettera
Casa di cura Cristo Re
Colle del Castellaccio 152 m
Salita Castellaccio
Torrente Boccetta

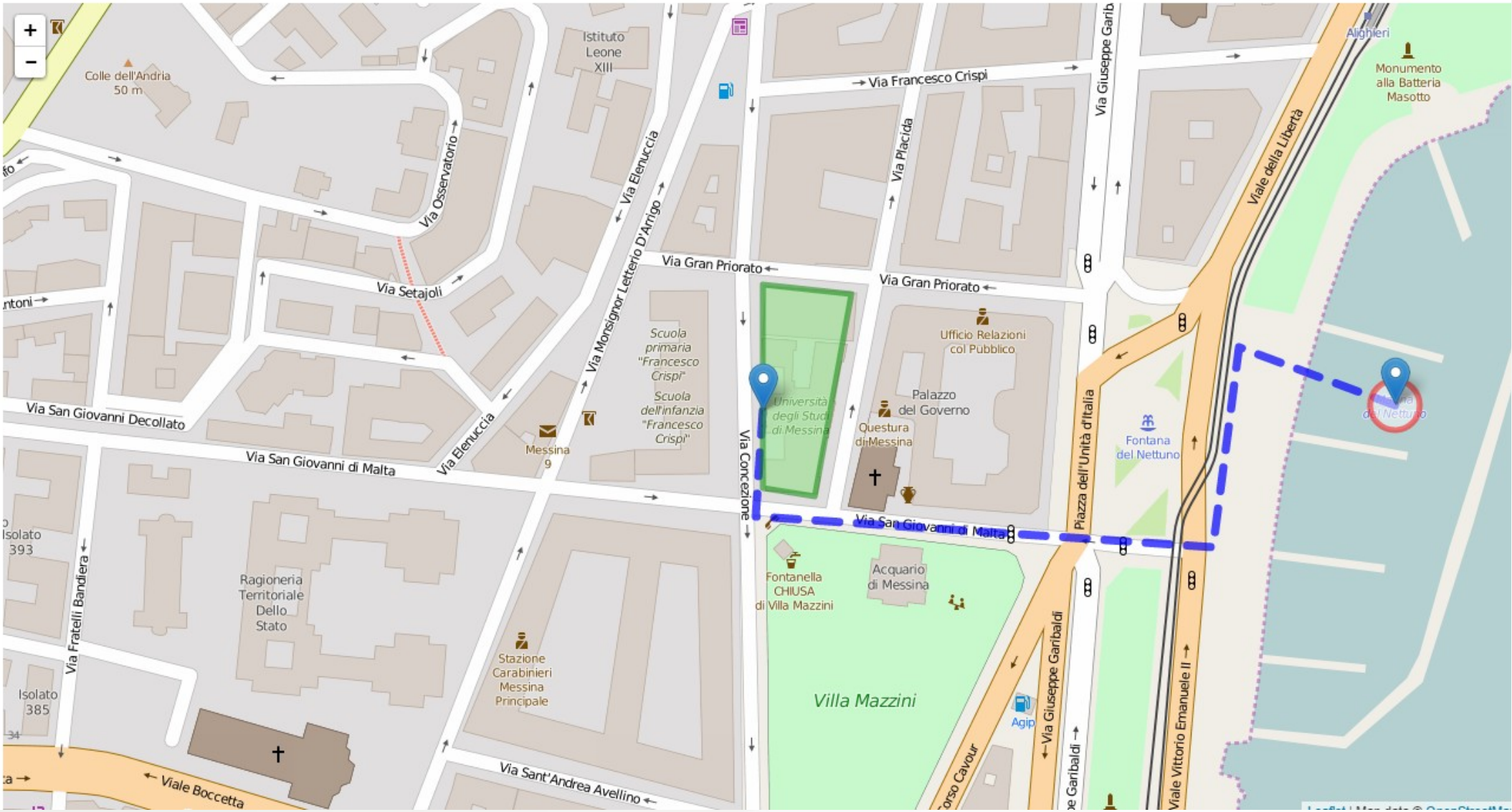
Es. 4 – Popups

```
<script>
var mappa = L
                .map('mapContainer')
                .setView([38.19941,15.55602], 16); // LAT, LONG



            L
                .tileLayer(
                      'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
                {
                            attribution: 'Map data &copy; <a           href="http://openstreetmap.org">OpenStreetMap</a>',
                            maxZoom: 20,
                      }
                )
            .addTo(mappa);



    var markerCospecs = L.marker([38.19941,15.55602])
                                  .addTo(mappa);

    var markerMarina = L.marker([38.19943,15.55889])
                                  .addTo(mappa);

    markerCospecs
        .bindPopup("<b>COSPECS</b><br><i>Voi siete qui</i>")
        .openPopup();

    markerMarina
        .bindPopup("<b>Marina del Nettuno</b><br><i>Stasera si va
qui</i>");


</script>
```


COSPECS
Voi siete qui
Viale Regina Margherita
Viale Boccetta
Viale Principe Umberto
Via Fratelli di Mari
Via Fata Morgana
Via Cicala
Via Trapani
Via Porto Salvo
Trapani
Via Quod Quaeris
Via la Legname
Via della Fonderia
Via Osservatorio
Via Pietro Longo
Via Ibica
Via Peschiera
Via del Pozzo
Villa Salus
Via Puntale Arena
Via Rero
Via Carrai
Via Sieve
Via Adda
Via Ticino
Salita Castellaccio
Colle del Castellaccio 152 m
Via Gagini
Via Gattoni
Via San Paolo
Via Enrico Martinez
Via Mario Aspa
Via Argentieri
Via San Camillo
Via della Munizione
Via Sant'Agostino
Via Rocca Guelfonia
Via Michele Amari
Casa di cura Cristo Re
Via Corazzone
Corso Cavour
Canottieri / Boccetta
Alighieri
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Salerno
Messina - Stromboli
Statua della Madonna della Lettera
Messina
Sicilia
Galleria Scoppo
Torrente Boccetta

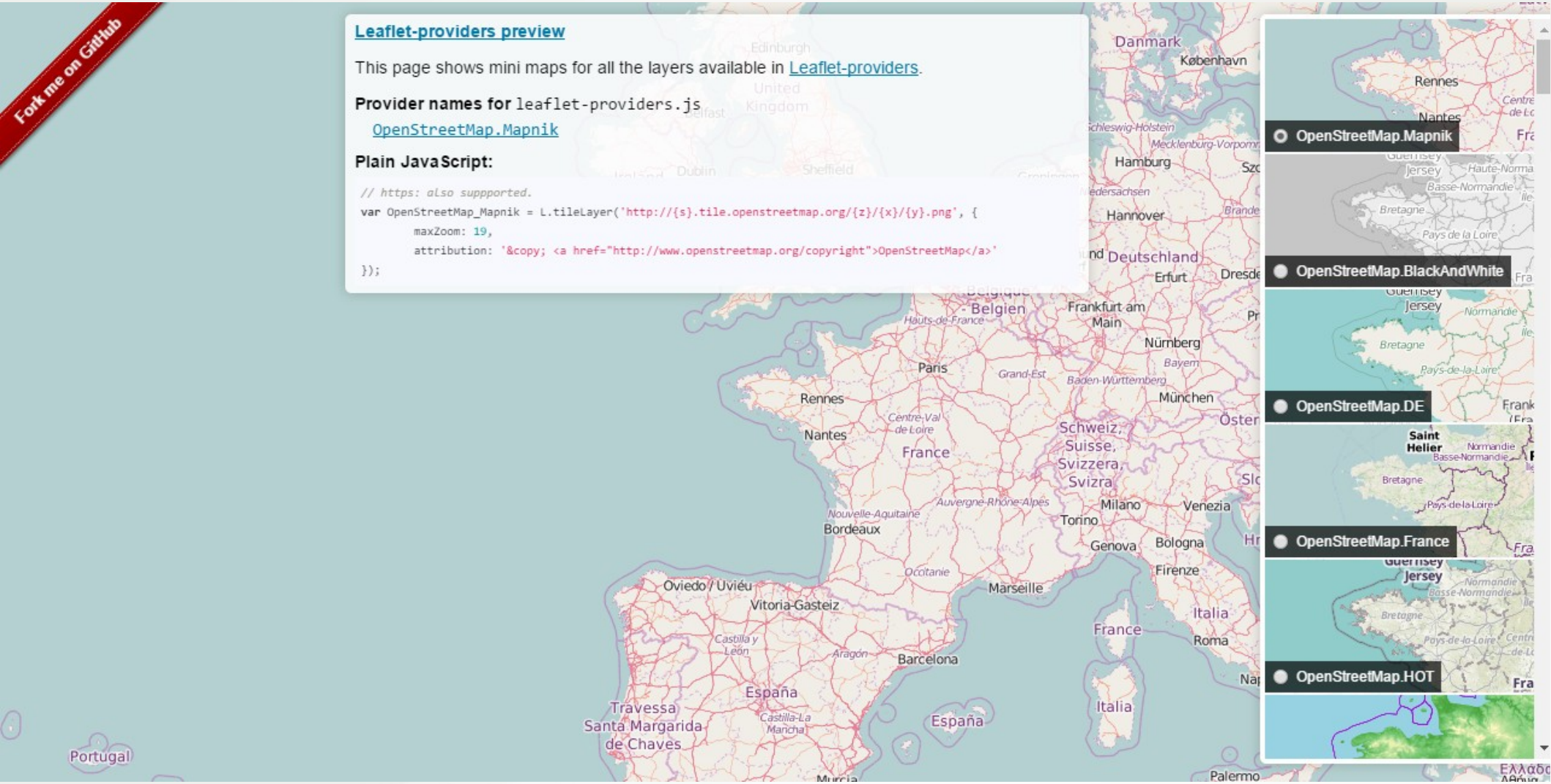
Es. 5 – Linee, Cerchi e Poligoni

```
var percorso = L.polyline([
                            [38.19941,15.55602],
                            [38.199037,15.555988],
                            [38.198927,15.558060],
                            [38.199636,15.558178],
                            [38.19943,15.55889]
                           ],
                           {
                            color: 'blue',
                            weight: 7,
                            opacity: .7,
                            dashArray: '20,15',
                            lineJoin: 'round'
                           })
               .addTo(mappa);

var polyCospecs = L.polygon([
                              [38.199863 , 15.556016],
                              [38.199827 , 15.556423],
                              [38.199106 , 15.556257],
                              [38.199135 , 15.556021],
                             ],
                             {
                              color: 'green',
                              fillColor: 'lightgreen',
                              fillOpacity: 0.5
                             })
               .addTo(mappa);

var circleMarina = L.circle([38.19943,15.55889], 10, //raggio in mt.
                             {
                              color: 'red',
                              fillColor: '#FFF',
                              fillOpacity: 0.5
                             })
               .addTo(mappa);
```


Colle dell'Andria
50 m
Istituto
Leone
XIII
Via Osservatorio
Via Elenuccia
Via Monsignor Letterio D'Arrigo
Via Francesco Crispi
Via Placida
Via Giuseppe Garib
Alighieri
Monumento
alla Batteria
Masotto
Viale della Libertà
Via Gran Priorato
Via Setajoli
Scuola
primaria
"Francesco
Crispi"
Scuola
dell'infanzia
"Francesco
Crispi"
Università
degli Studi
di Messina
Ufficio Relazioni
col Pubblico
Palazzo
del Governo
Questura
di Messina
Fontana
del Nettuno
Via San Giovanni Decollato
Via San Giovanni di Malta
Messina
9
Via Concezione
Piazza dell'Unità d'Italia
Fontanella
CHIUSA
di Villa Mazzini
Acquario
di Messina
Ragioneria
Territoriale
Dello
Stato
Via Fratelli Bandiera
Stazione
Carabinieri
Messina
Principale
Villa Mazzini
Agip
Via Giuseppe Garibaldi
Corso Cavour
Viale Vittorio Emanuele II
Isolato
393
Isolato
385
Viale Boccetta
Via Sant'Andrea Avellino

Es. 6 – Layer groups

https://leaflet-extras.github.io/leaflet-providers/preview/



Es. 6 – Layer groups

```
var mappa = L.map('mapContainer')
     .setView([38.19941,15.55602], 16); // LAT, LONG


var baseOpenStreetMap = L.tileLayer(
     'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
     {
        attribution: 'Map data &copy; <a href="http://openstreetmap.org">OpenStreetMap</a>',
        maxZoom: 18
     }
   )
   .addTo(mappa);

var baseOpenTopoMap = L.tileLayer(
     'http://{s}.tile.opentopomap.org/{z}/{x}/{y}.png',
     {
     attribution: 'Map data: &copy; <a
href="http://www.openstreetmap.org/copyright">OpenStreetMap</a>, <a
href=”http://viewfinderpanoramas.org">SRTM</a> | Map style: &copy; <a
href="https://opentopomap.org">OpenTopoMap</a> (<a href="https://creativecommons.org/licenses/by-
sa/3.0/">CC-BY-SA</a>)',
     maxZoom: 18
     }
   );

var baseEsriWorldImageryMap = L.tileLayer(
     'http://server.arcgisonline.com/ArcGIS/rest/services/World_Imagery/MapServer/tile/{z}/{y}/{x}',
     {
     attribution: 'Tiles &copy; Esri &mdash; Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye,
Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS User Communit',
     maxZoom: 18
     }
   );
```

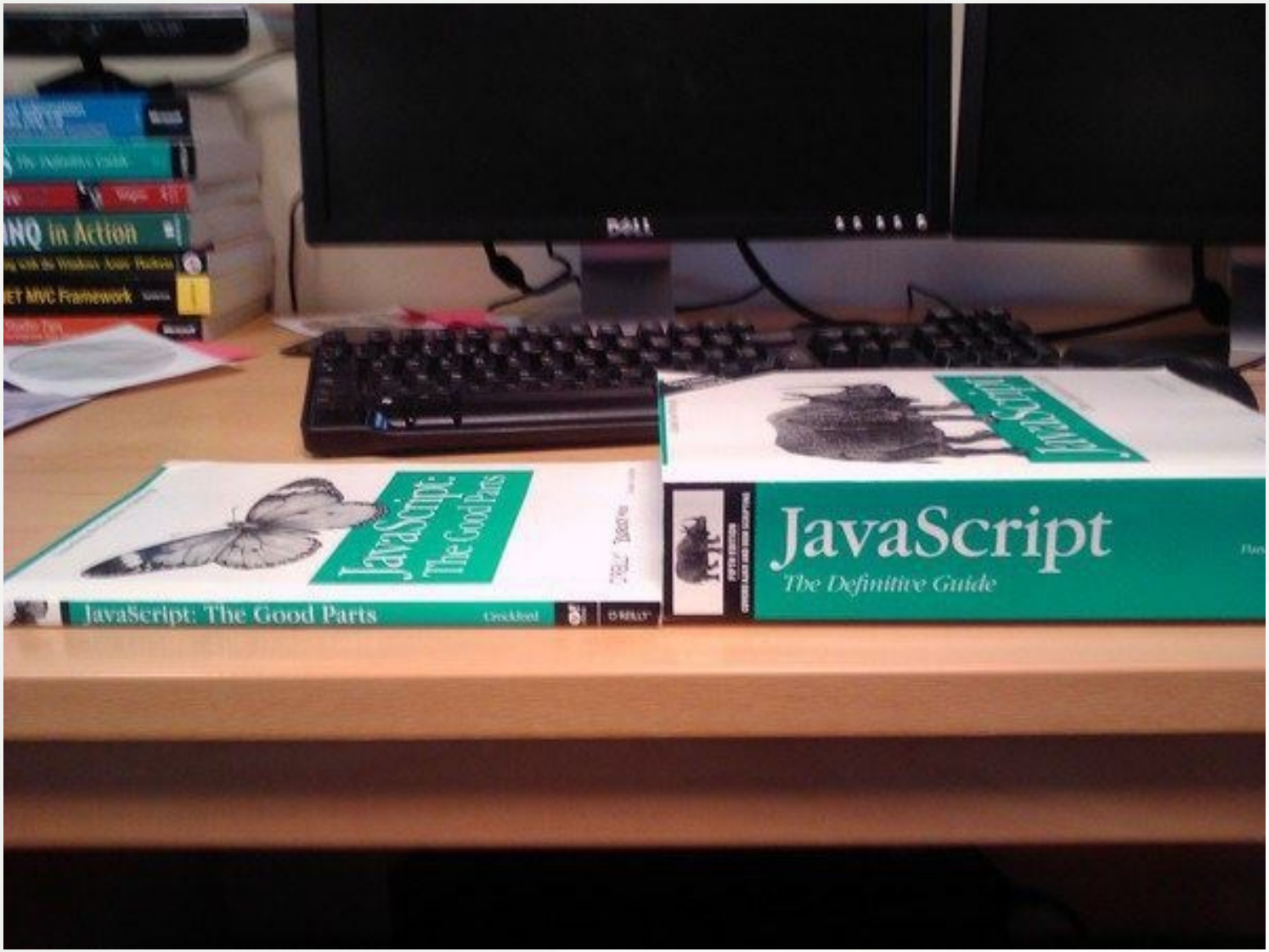
Es. 6 – Layer groups

```
var markerCospecs = L.marker([38.19941,15.55602]);


var markerMarina = L.marker([38.19943,15.55889]);


var percorso = L.polyline([
[38.19941,15.55602],
[38.199037,15.555988],
[38.198927,15.558060],
[38.199636,15.558178],
[38.19943,15.55889]
  ],
  {
color: 'blue',
weight: 7,
opacity: .7,
dashArray: '20,15',
lineJoin: 'round'
  });


var polyCospecs = L.polygon([
[38.199863 , 15.556016],
[38.199827 , 15.556423],
[38.199106 , 15.556257],
[38.199135 , 15.556021],
],
{
color: 'green',
fillColor: 'lightgreen',
fillOpacity: 0.5
});


var circleMarina = L.circle([38.19943,15.55889], 10, //raggio in mt.
{
color: 'red',
fillColor: '#FFF',
fillOpacity: 0.5
});
```

Es. 6 – Layer groups

```
var shapes = L.layerGroup([percorso, polyCospecs, circleMarina]);

var markers = L.layerGroup([markerCospecs, markerMarina]);

var baseLayers = {
    "Strade": baseOpenStreetMap,
    "Topografia": baseOpenTopoMap,
    "Fotografica" : baseEsriWorldImageryMap
    };

var overlays = {
    "Edifici & Percorsi": shapes,
    "Entrate": markers
    };

L.control
 .layers(baseLayers,overlays)
 .addTo(mappa);
```

Es. 7 – GeoJSON e altri formati di dati



JSON

è un semplice formato per lo scambio di dati basato su un sottoinsieme del Linguaggio di Programmazione JavaScript

```
var markers = [
      {
      "point":new GLatLng(40.266044,-74.718479),
      "homeTeam":"Lawrence Library",
      "awayTeam":"LUGip",
      "markerImage":"images/red.png",
      "information": "Linux users group meets second Wednesday of each month.",
      "fixture":"Wednesday 7pm",
      "capacity":"",
      "previousScore":""
      },
      {
      "point":new GLatLng(40.211600,-74.695702),
      "homeTeam":"Hamilton Library",
      "awayTeam":"LUGip HW SIG",
      "markerImage":"images/white.png",
      "information": "Linux users can meet the first Tuesday of the month to work out harward and
      configuration issues.",
      "fixture":"Tuesday 7pm",
      "capacity":"",
      "tv":""
      }
]
```

GeoJSON

è un formato aperto utilizzato per archiviare una collezione di geometrie spaziali i cui attributi sono descritti attraverso JSON.

```
var someFeatures = [{
    "type": "Feature",
    "properties": {
        "name": "Coors Field",
        "show_on_map": true
    },
    "geometry": {
        "type": "Point",
        "coordinates": [-104.99404, 39.75621]
    }
}, {
    "type": "Feature",
    "properties": {
        "name": "Busch Field",
        "show_on_map": false
    },
    "geometry": {
        "type": "Point",
        "coordinates": [-104.98404, 39.74621]
    }
}];
```

TopoJSON

è un'estensione di GeoJSON che codifica topologie invece di geometrie. (!)

GPX

è uno schema XML progettato per il trasferimento di dati GPS tra applicazioni software.

KML

è un linguaggio basato su XML creato per gestire dati geospaziali in tre dimensioni nei programmi Google.

Es. 7 – GeoJSON e altri formati di dati

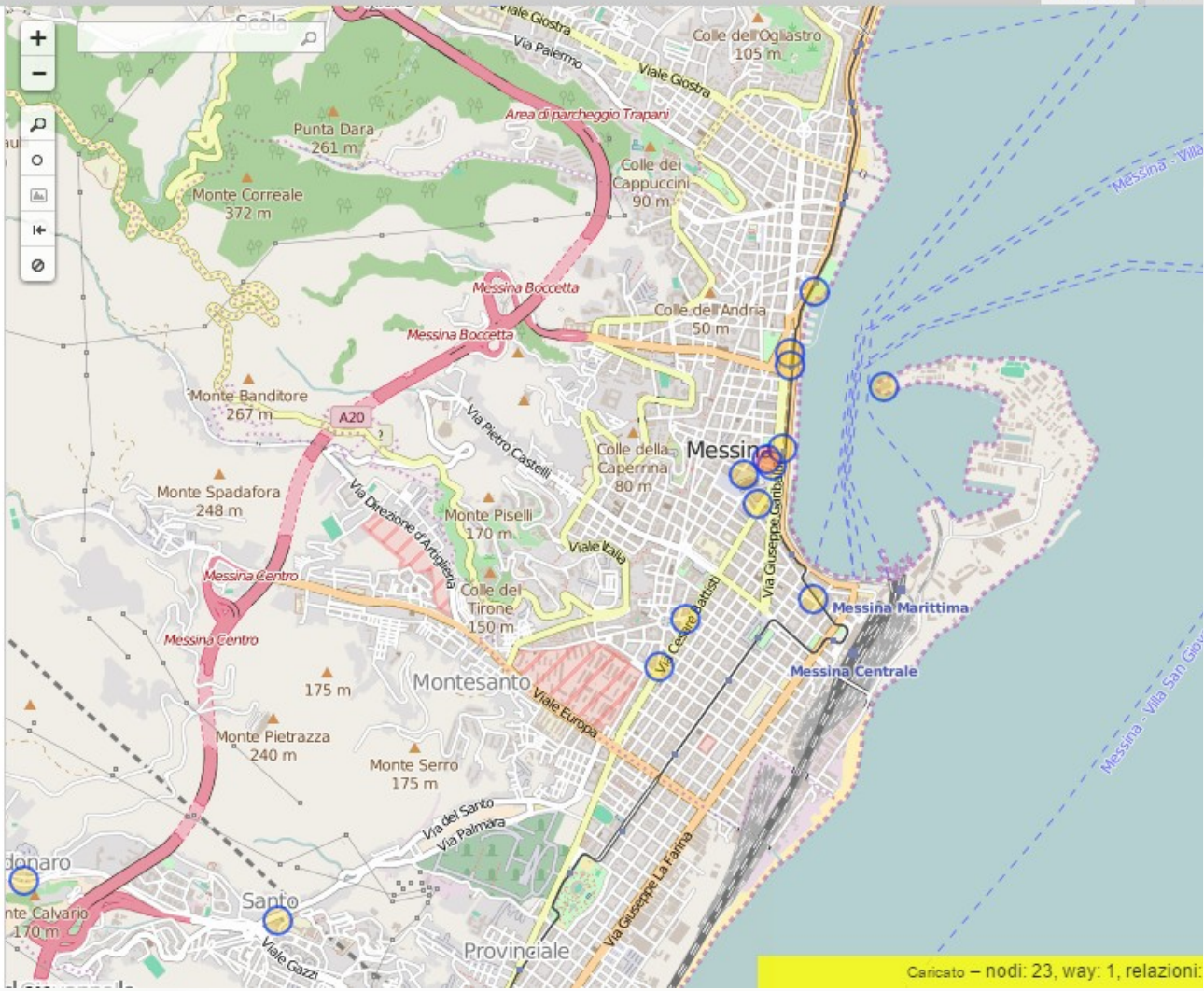
https://overpass-turbo.eu/

Esegui | Condividi | Esporta | Wizard | Salva | Carica | Impostazioni | Aiuto | overpass turbo

Flattr this

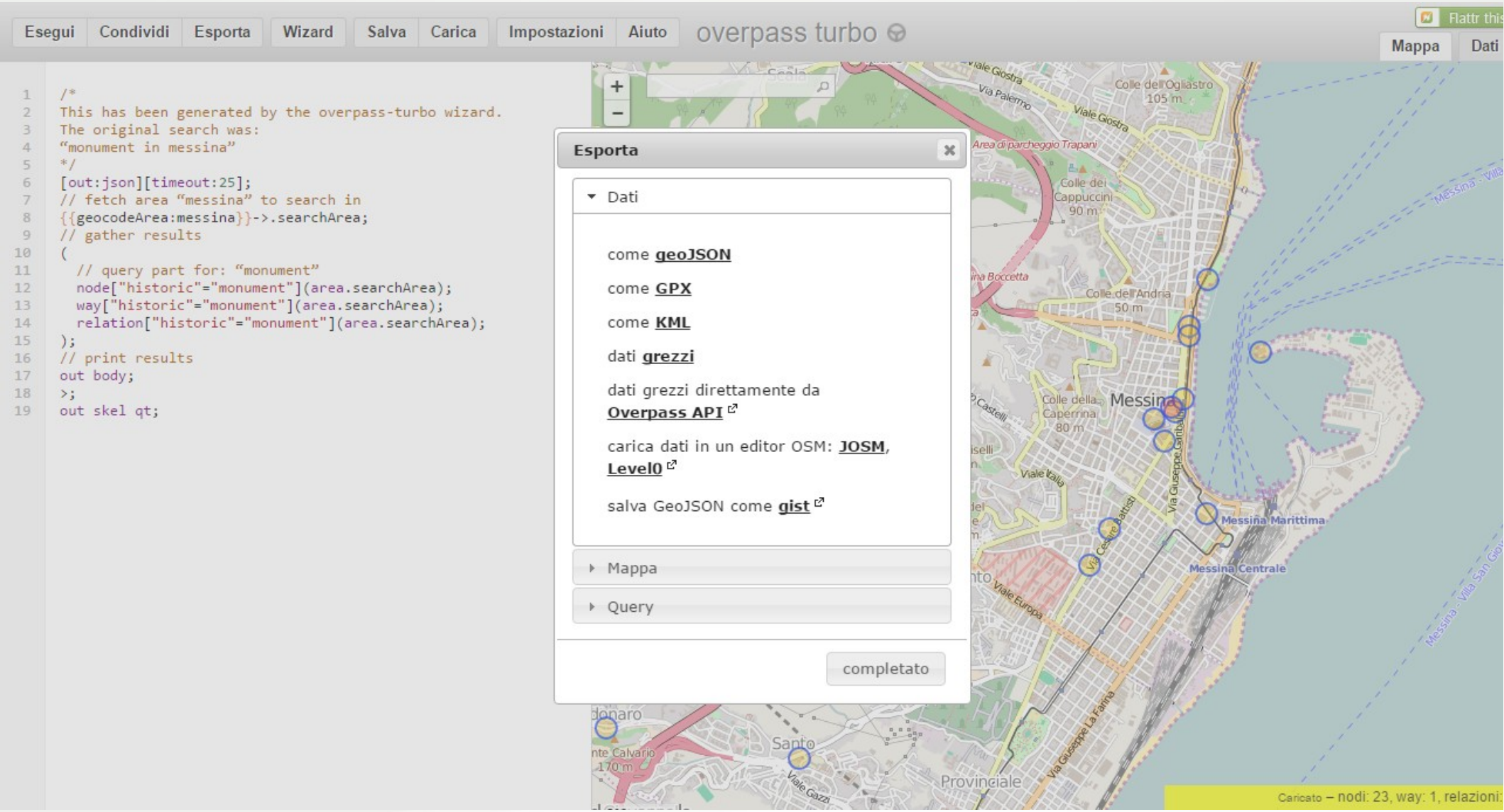
Mappa | Dati

```
/*
This has been generated by the overpass-turbo wizard.
The original search was:
“monument in messina”
*/
[out:json][timeout:25];
// fetch area “messina” to search in
{{geocodeArea:messina}}->.searchArea;
// gather results
(
  // query part for: “monument”
  node["historic"="monument"](area.searchArea);
  way["historic"="monument"](area.searchArea);
  relation["historic"="monument"](area.searchArea);
);
// print results
out body;
>;
out skel qt;
```



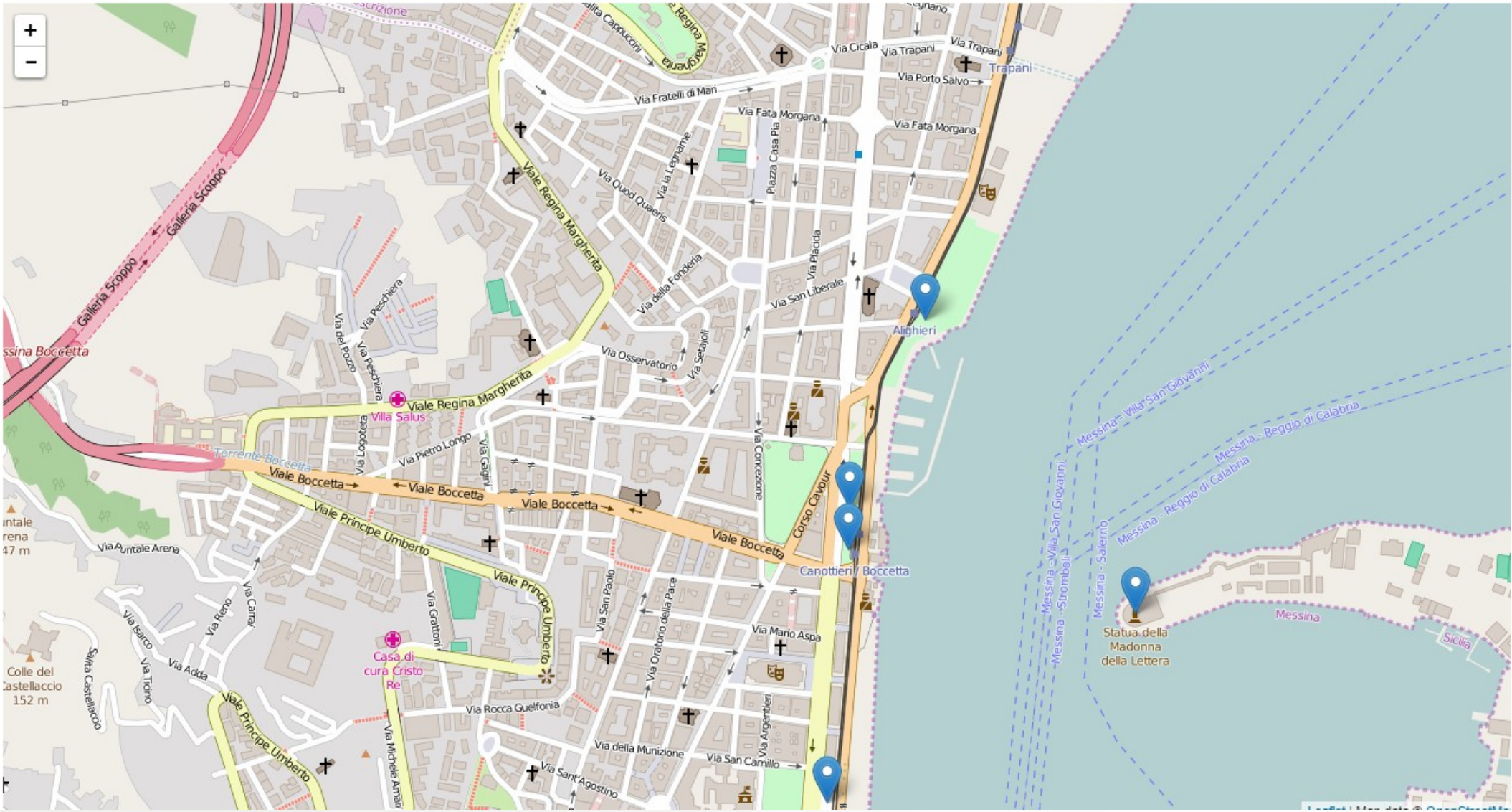
Es. 7 – GeoJSON e altri formati di dati

https://overpass-turbo.eu/



Es. 7 – GeoJSON e altri formati di dati

```
<script src="../lib/jquery-3.1.0.min.js"></script>
<script>
var mappa = L.map('mapContainer')
   .setView([38.19941,15.55602], 16); // LAT, LONG


L.tileLayer(
      'http://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png',
      {
      attribution: 'Map data &copy; <a href="http://openstreetmap.org">OpenStreetMap</a>',
      maxZoom: 18,
      }
   )
 .addTo(mappa);


var $req = $.ajax({
     dataType: "json",
     url:
'https://gist.githubusercontent.com/gpizzimenti/e0bdc49ae9511a8e55b0a52a696c65fe/raw/d3b0f0aef521cd28c
69bce52e089f71787d5f5ab/monumentsinmessina.overpass.geojson'
     });

$.when($req)
     .then(elaboraDati, gestisciErrore);


function elaboraDati(data) {
     var layerMonumenti = L.geoJson().addTo(mappa);
     layerMonumenti.addData(data);
};

function gestisciErrore() {
     alert("Si è verificato un errore!");
};

</script>
```


Galleria Scoppo
Viale Regina Margherita
Villa Salus
Torrente Boccetta
Viale Boccetta
Viale Principe Umberto
Via Cicala
Via Trapani
Via Porto Salvo
Trapani
Via Fratelli di Mari
Via Fata Morgana
Via Quod Quaeris
Via la Legname
Piazza Casa Pia
Via della Fonderia
Via Placida
Via San Liberale
Alighieri
Via Osservatorio
Via Setaioli
Via Pescheria
Via del Pozzo
Via Pietro Longo
Via Gabri
Via Concezione
Corso Cavour
Canottieri / Boccetta
Via Puntale Arena
Via Reno
Via Carrai
Via Isarco
Via Adda
Via Ticino
Salita Castellaccio
Colle del Castellaccio 152 m
Via Grattoni
Via San Paolo
Via Oratorio della Pace
Via Mario Aspa
Casa di cura Cristo Re
Via Rocca Guelfonia
Via Michele Amari
Via della Munizione
Via San Camillo
Via Argentieri
Via Sant'Agostino
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Salerno
Messina - Stromboli
Statua della Madonna della Lettera
Messina
Sicilia

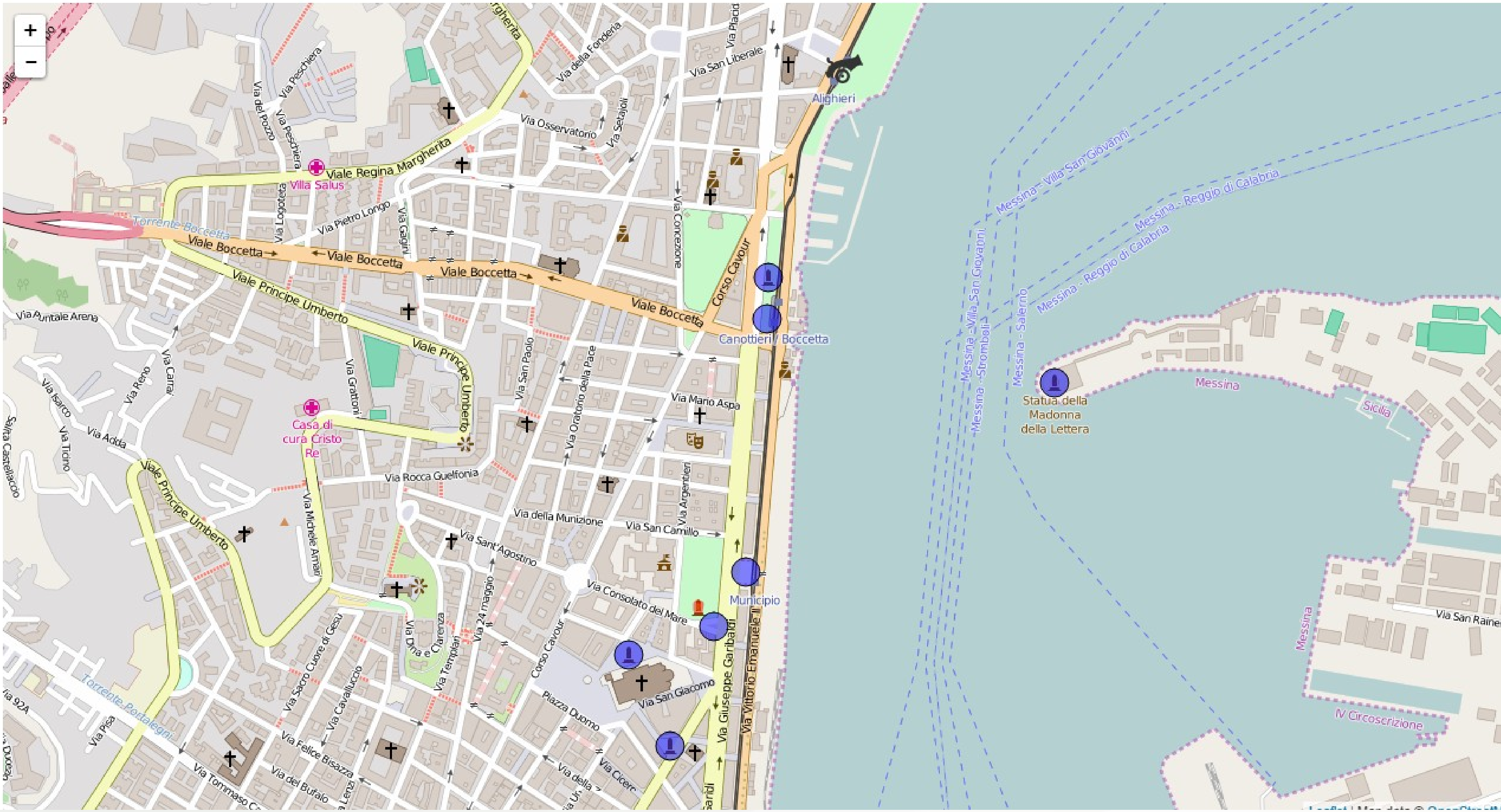
Es. 7 – GeoJSON e altri formati di dati

```
var geojsonMarkerStyle = {
    radius: 12,
    fillColor: "blue",
    color: "#000",
    weight: 1,
    opacity: 1,
    fillOpacity: 0.5
};
```

```
var cannonIcon = L.icon({
    iconUrl: 'cannon.png',
    iconSize: [32, 32],
    iconAnchor: [16, 37],
    popupAnchor: [0, -28]
});
```

Es. 7 – GeoJSON e altri formati di dati

```
function elaboraDati(data) {
     var layerMonumenti = L.geoJson(data, {
        style: function(feature) {
               if (feature.geometry.type == "Polygon") {
                        return {
                                 color: "red",
                                 fillColor: "gold",
                                 fillOpacity: 0.5
                               }
               }
          },
        pointToLayer: function (feature, latlng) {
               if (feature.properties && feature.properties.name && feature.properties.name ==
"Monumento alla Batteria Masotto") {
                        return L.marker(latlng, {icon: cannonIcon});
               } else {
                        return L.circleMarker(latlng, geojsonMarkerStyle);
          },
        onEachFeature: function (feature, layer) {
               if (feature.properties && feature.properties.name) {
                        layer.bindPopup(feature.properties.name);
               }

          },

        filter: function(feature, layer) {
               return (feature.geometry.type == "Polygon" || feature.geometry.coordinates[0] > 15.50);
          }
   }).addTo(mappa);

};
```



Viale Regina Margherita
Villa Salus
Viale Boccetta
Viale Principe Umberto
Torrente Boccetta
Via Pietro Longo
Via Osservatorio
Via San Liberale
Via della Fonderia
Alighieri
Corso Cavour
Via Concezione
Canottieri / Boccetta
Via Mario Aspa
Casa di cura Cristo Re
Via Rocca Guelfonia
Via della Munizione
Via San Camillo
Via Sant'Agostino
Via Consolato del Mare
Municipio
Via Giuseppe Garibaldi
Via Vittorio Emanuele II
Via San Giacomo
Piazza Duomo
Torrente Portalegni
Via Tommaso Cannizzaro
Via Felice Bisazza
Via del Bufalo
Statua della Madonna della Lettera
Messina
Messina - Villa San Giovanni
Messina - Reggio di Calabria
Messina - Salerno
Messina - Stromboli
Sicilia
Via San Raineri
IV Circoscrizione

Es. 7 – GeoJSON e altri formati di dati

http://leafletjs.com/plugins.html#overlay-data-formats

Overlay data formats

Load your own data from various GIS formats.

Plugin	Description	Maintainer
leaflet-omnivore	Loads & converts CSV, KML, GPX, TopoJSON, WKT formats for Leaflet.	Mapbox
Leaflet.FileLayer	Loads files (GeoJSON, GPX, KML) into the map using the HTML5 FileReader API (i.e. locally without server).	Mathieu Leplatre
Leaflet.geoCSV	Leaflet plugin for loading a CSV file as geoJSON layer.	Iván Eixarch
Leaflet.Shapefile	Put a shapefile onto your map as a layer.	Calvin Metcalf
Leaflet.FileGDB	Put an ESRI File GeoDatabase onto your map as a layer.	Calvin Metcalf
Leaflet.encoded	Use encoded polylines in Leaflet.	Jieter
Leaflet GPX	GPX layer, targeted at sporting activities by providing access to information such as distance, moving time, pace, elevation, heart rate, etc.	Maxime Petazzoni
Wicket	A modest library for translating between Well-Known Text (WKT) and Leaflet geometry objects (e.g. between L.marker() instances and "POINT()" strings).	K. Arthur Endsley
qgis2web	A QGIS plugin to make webmaps without coding.	Tom Chadwin

Es. 7 – GeoJSON e altri formati di dati

http://leafletjs.com/plugins.html#dynamiccustom-data-loading

Dynamic/custom data loading

Load dynamic data which is updated in the map, or load GIS vector data in non-standard ways.

Plugin	Description	Maintainer
Leaflet Realtime	Put realtime data on a Leaflet map: live tracking GPS units, sensor data or just about anything.	Per Liedman
Leaflet Ajax	Add GeoJSON data via ajax or jsonp.	Calvin Metcalf
Leaflet.Liveupdate	Periodically ('live') update something on a map (Demo)	Martijn Grendelman
Leaflet.Pouch	Use PouchDB to sync CouchDB data to local storage (indexedDB), to just add couchDB data or as just a less confusing implementation of indexedDB.	Calvin Metcalf
Leaflet.Indoor	Create indoor maps.	Christopher Baines
Leaflet uGeoJSON	Add an auto updating GeoJSON data Layer via ajax post requests.	Benjamin VADANT

Es. 7 – GeoJSON e altri formati di dati

http://leafletjs.com/plugins.html#markers--renderers

Overlay display

The following plugins provide new ways of displaying overlay data information.

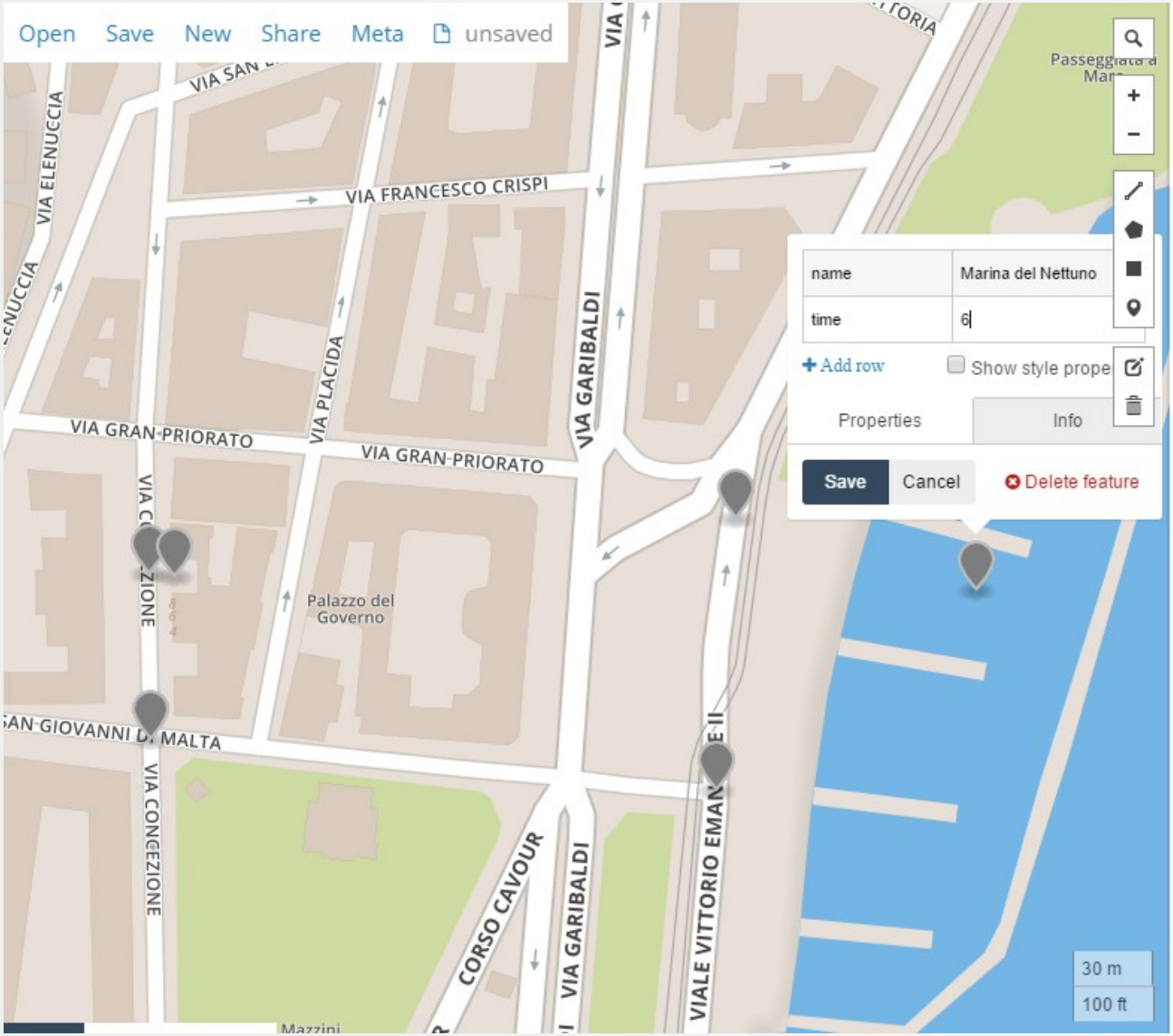
- Markers & renderers
- Overlay animations
- Clustering/decluttering
- Heatmaps
- DataViz

Markers & renderers

These plugins provide new markers or news ways of converting abstract data into images in your screen. Leaflet users versed in GIS also know these as symbolizers.

Plugin	Description	Maintainer
Leaflet.ellipse	Leaflet.ellipse place ellipses on map by specifying center point, semi-major axis, semi-minor axis, and tilt degrees from west.	JD Fergason
Leaflet.label	Adds text labels to map markers and vector layers.	Jacob Toye
Leaflet-semicircle	Adds functionality to `L.Circle` to draw semicircles.	Jieter

http://geojson.io/#map=18/38.19904/15.55730



```
var layerProvince  = L.geoJson(pData,
                {
                style: styleProvincia,
                onEachFeature: featureEvents
                })

,

layerRegioni = L.geoJson(rData,
                {
                   style: styleDensity,
                   onEachFeature: featureEvents
                });
```

Es. 8 – Eventi

```
var styleDensity = function styleDensity(feature) {
 return {
    fillColor: getColor(feature.properties.density),
    weight: 2,
    opacity: 1,
    color: 'white',
    dashArray: '3',
    fillOpacity: 0.7
   };
}


var getColor = function getColor(d) {
return d > 1000 ? '#800026' :
    d > 500  ? '#BD0026' :
    d > 200  ? '#E31A1C' :
    d > 100  ? '#FC4E2A' :
    d > 50   ? '#FD8D3C' :
    d > 20   ? '#FEB24C' :
    d > 10   ? '#FED976' :
   '#FFEDA0';
}
```

Es. 8 – Eventi

```
var featureEvents = function featureEvents(feature, layer) {
 layer
    .bindPopup("<b>" + (feature.id ||  feature.properties.name ) +
"</b>")
    .on({
        mouseover: highlightFeature,
        mouseout: resetHighlight,
        click: zoomToFeature
    });
}
```

Es. 8 – Eventi

```
var highlightFeature = function highlightFeature(e) {
  var layer = e.target;

  layer.setStyle({
    weight: 5,
    color: '#666',
    dashArray: '',
    fillOpacity: 0.7
    });

  if (!L.Browser.ie && !L.Browser.opera) {
    layer.bringToFront();
    }

    layer.openPopup();
}
```

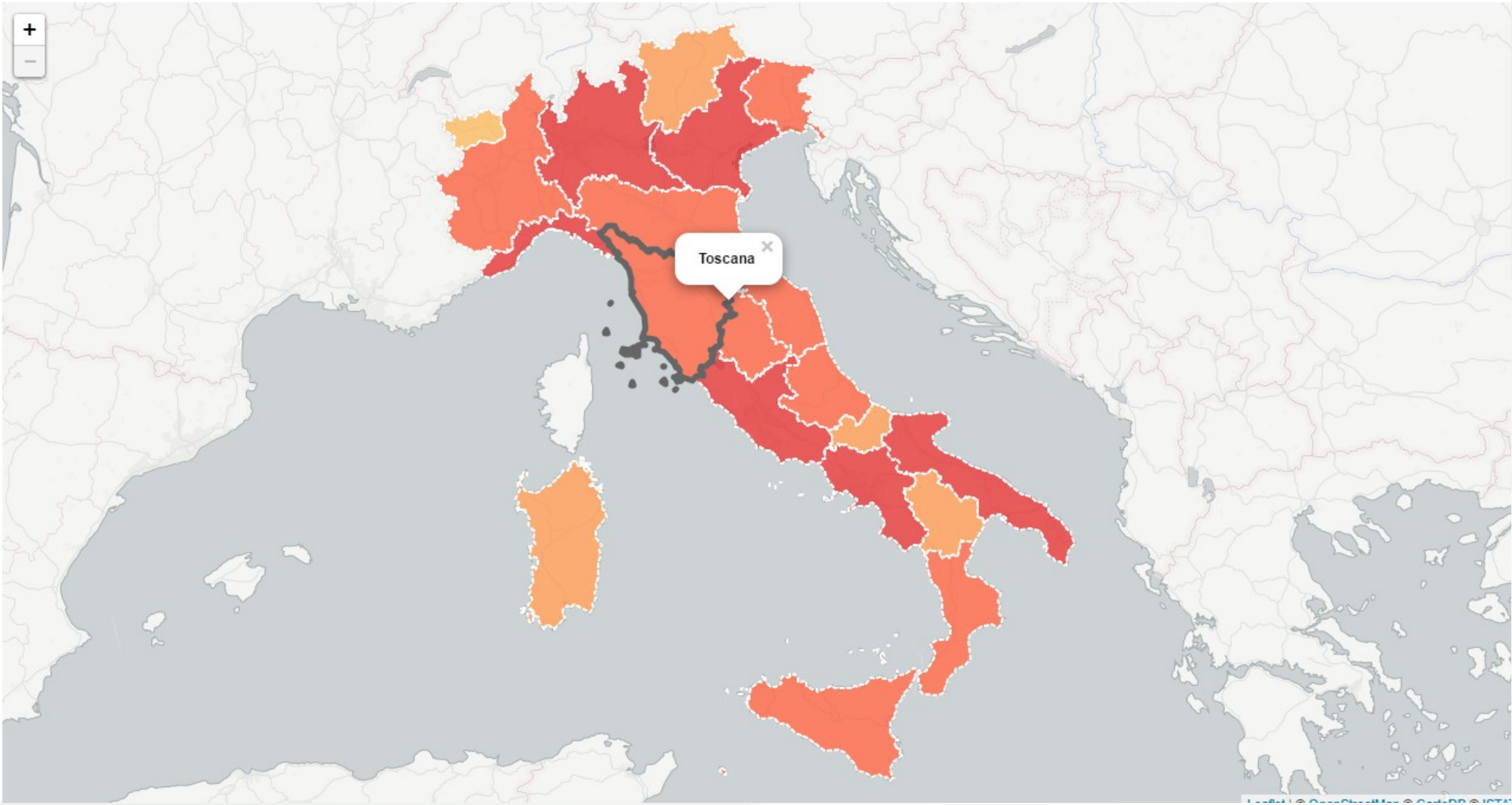
Es. 8 – Eventi

```
var resetHighlight = function resetHighlight(e) {
    var layer = e.target;

    layerProvince.resetStyle(layer);
    layerRegioni.resetStyle(layer);
}


var zoomToFeature = function zoomToFeature(e) {
    var layer = e.target;

    mappa.fitBounds(layer.getBounds());
}
```

```
layerRegioni.addTo(mappa);
```

```
mappa.on('zoomend', function() {
    if (mappa.getZoom() > 7 && mappa.hasLayer(layerRegioni)) {
        mappa
            .removeLayer(layerRegioni)
            .addLayer(layerProvince);
    }
    if (mappa.getZoom() < 8 && !mappa.hasLayer(layerRegioni)) {
        mappa
              .addLayer(layerRegioni)
              .removeLayer(layerProvince)
              .fitBounds(layerRegioni.getBounds())
              .panTo(new L.LatLng(42.0,12.71216));
    }
});
```

Es. 8 – Eventi

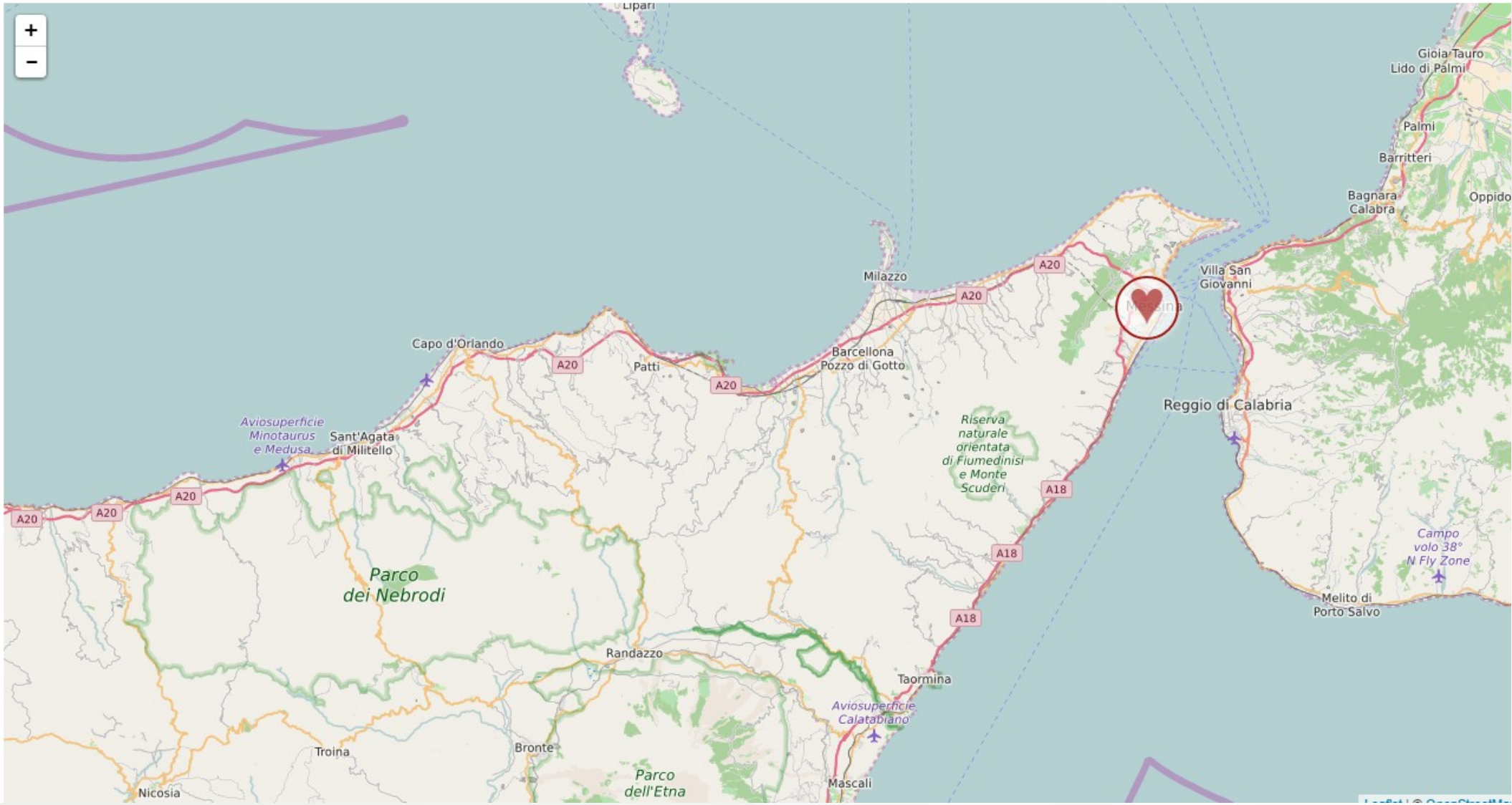


```
var icon = L.divIcon({
    iconSize: [50, 50],
    iconAnchor: [35, 20],
    popupAnchor: [10, 0],
    shadowSize: [0, 0],
    className: 'animated-icon my-icon-id' ,
    html : "<div class='animated-icon-content
pulse'>♥</div>"
})
```

```
var ll = L.latLng(38.19941, 15.55602)


var marker = L.marker(ll, {
  icon: icon,
  title: 'I like it when you move it!'
})


marker.addTo(mappa);

var myIcon = document.querySelector('.my-icon-id');
```

```
.pulse {
   animation: pulse 1s linear infinite;
}

@keyframes "pulse" {
        0% {
          color: rgba(165, 25, 25, 1);
        }
        90% {
          color: rgba(255,0,0,0.0);
        }
        100% {
          color: rgba(255,0,0,1.0);
        }

}
```

09 – Animazioni (Markers)



```
var flyButton = L.Control.extend({

  options: {
position: 'topright'
//control position - allowed: 'topleft',
'topright', 'bottomleft', 'bottomright'
  },
...
```

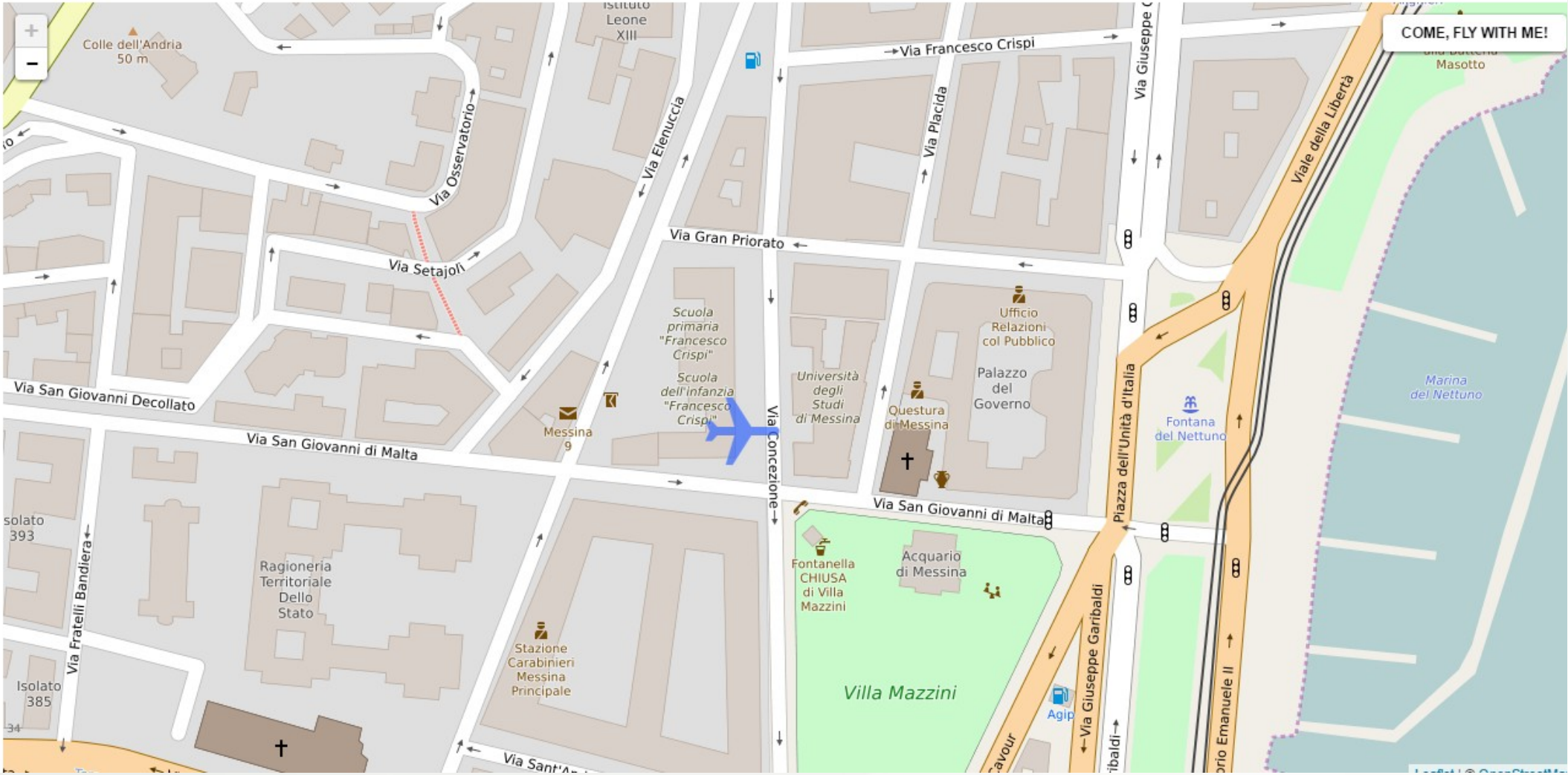
09 – Animazioni (Markers)

…

```
onAdd: function (map) {
                    var container = L.DomUtil.create('div', 'leaflet-bar
leaflet-control leaflet-control-custom');

                    container.style.backgroundColor = 'white';
                    container.style.width = '150px';
                    container.style.height = '30px';
                    container.style.lineHeight = '30px';
                    container.style.fontWeight= 'bold';
                    container.style.textAlign= 'center';
                    container.style.cursor = 'pointer';
                    container.innerHTML = "COME, FLY WITH ME!";

                    container.onclick = function(){
                      marker.setLatLng(lMarina);
                    }

                return container;
                }
            });

            mappa.addControl(new flyButton());
```

```
.animated-icon{
  width: 70px;
  height: 70px;
  background-color: transparent;
  transition: transform 2s linear;
}

.animated-icon:after{
  content: "✈";
  display:block;
  width: 70px;
  height: 70px;
  color: rgba(51, 102, 255, 0.7);
  font-size:70px;
}
```

09 – Animazioni (Markers)



09 – Animazioni (Markers)

https://ewoken.github.io/Leaflet.MovingMarker/

https://khuevu.github.io/Leaflet.PowerMarker/

https://github.com/socib/Leaflet.TimeDimension

09 – Animazioni (Markers)

http://leafletjs.com/plugins.html#map-interaction

Map interaction

New ways to interact with the map itself.

- Layer switching controls
- Interactive pan/zoom
- Bookmarked pan/zoom
- Fullscreen
- Minimaps & synced maps
- Measurement
- Mouse coordinates
- Events
- User interface
- Print/export
- Geolocation

Layer switching controls

The following plugins enhance or extend `L.Control.Layers`.

Plugin	Description	Maintainer
Leaflet.AutoLayers	Automatically pull layers from multiple mapservers and organize/search them with user	Alex Ebadirad

10 – Animazioni (Heatmaps)

http://leafletjs.com/plugins.html#heatmaps

Heatmaps

These plugins create heatmaps and heatmap-like visualizations from vector data.

Plugin	Description	Maintainer
MaskCanvas	Canvas layer that can be used to visualize coverage.	Dominik Moritz
HeatCanvas	Simple heatmap api based on HTML5 canvas.	Sun Ning
heatmap.js	JavaScript Library for HTML5 canvas based heatmaps. Its Leaflet layer implementation supports large datasets because it is tile based and uses a quadtree index to store the data.	Patrick Wied
Leaflet divHeatmap	Lightweight and versatile heatmap layer based on CSS3 and divIcons	Daniele Piccone
WebGL Heatmap	High performance Javascript heatmap plugin using WebGL.	Benjamin J DeLong
Leaflet.heat	A tiny, simple and fast Leaflet heatmap plugin. Uses simpleheat under the hood, additionally clustering points into a grid for performance. (Demo)	Vladimir Agafonkin

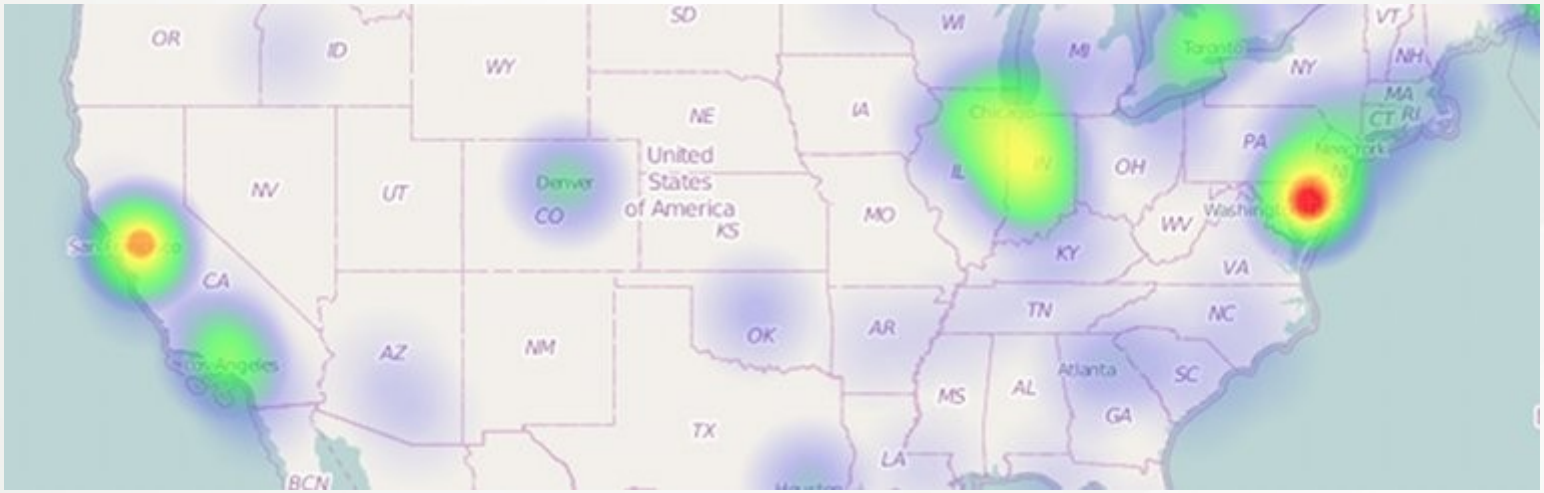
DataViz

Powerful multi-purpose libraries for data visualization

10 – Animazioni (Heatmaps)

https://www.patrick-wied.at/static/heatmapjs/

https://www.patrick-wied.at/static/heatmapjs/plugin-leaflet-layer.html



```
        //configurazione heatmap

        var cfg = {
          "radius": 0.2, //If scaleRadius is false,
radius is measured in pixels. If scaleRadius is true
it's measured in the scale of the map.
          "maxOpacity": .8,
          "scaleRadius": true,
          "useLocalExtrema": false,
          "latField": 'lat',
          "lngField": 'lng',
          "valueField": 'val'
        };
```

```
var heatmapLayer = new HeatmapOverlay(cfg);

    heatmapLayer.addTo(mappa);


var heatData = {
                  max: 100,
                  min: 0,
                  data: [
                          {
                            lat: 38.19941,
                            lng: 15.55602,
                            val: 0,
                            ascending: true
                          }
                     ]
                };
```

10 – Animazioni (Heatmaps)

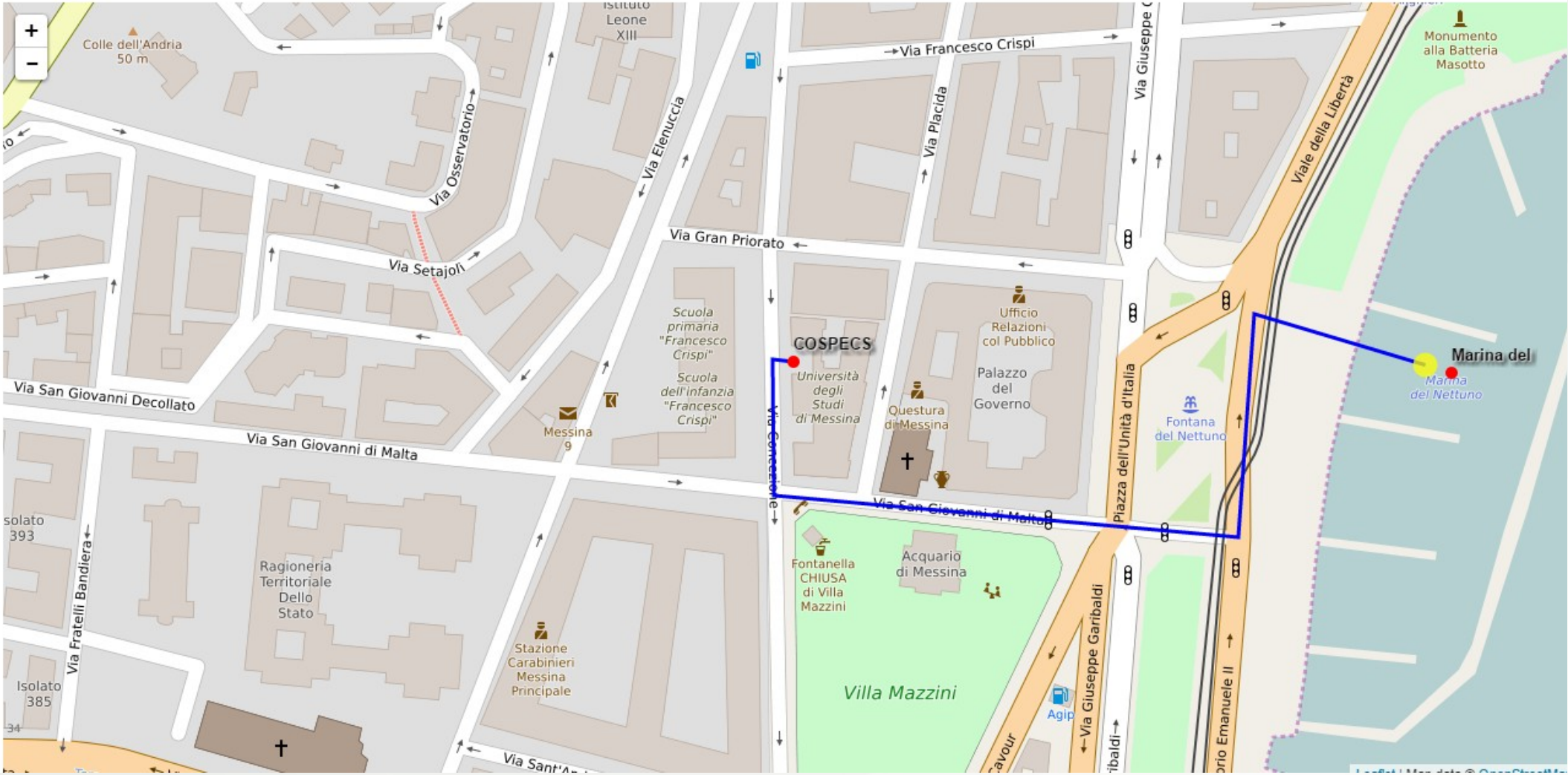
```
var pulsate =  function (pulse,ascending)    {

                var increaseFactor = 2,
                    decreaseFactor = 1.5;

                    if (pulse > 100) {
                        pulse = 100;
                        ascending = false;
                    }
                    else if (pulse <= 0) {
                        pulse = 0;
                        ascending = true;
                    }

                    if (ascending) {
                        pulse = pulse + increaseFactor;
                    }
                    else  {
                        pulse = pulse - decreaseFactor;
                    }


                return  {
                        "pulse" : pulse,
                        "ascending" : ascending
                    }

            };
```

```
var eventPulsate =  function () {

            var data = heatData.data[0],
               ret = pulsate(data.val,data.ascending);

            data.val = ret.pulse;
            data.ascending = ret.ascending;

            heatmapLayer.setData(heatData);

        };
```

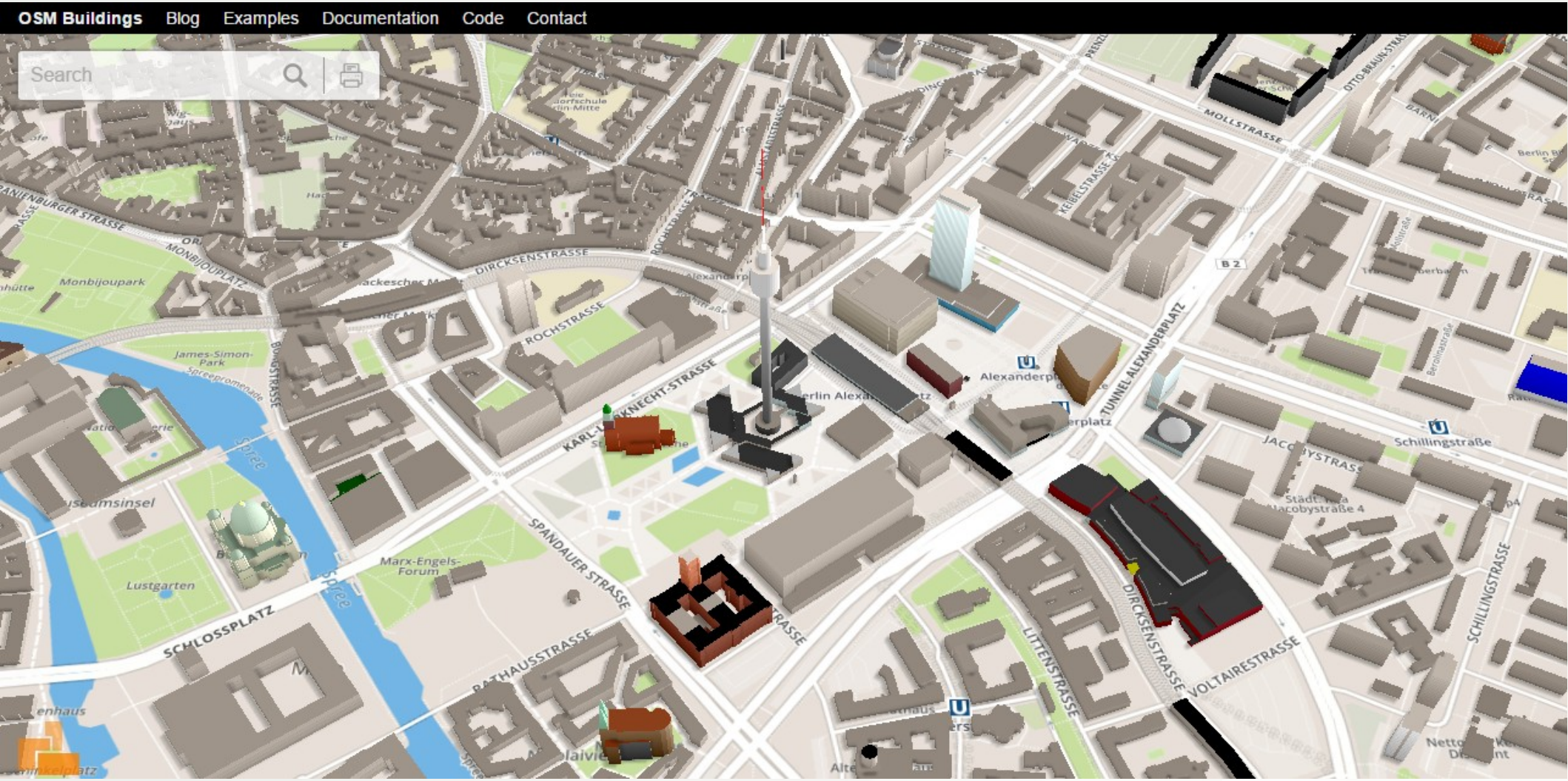
```
setInterval(eventPulsate,10); //aggiorniamo ogni 10
millsecs
```

from HERO to *super*HERO

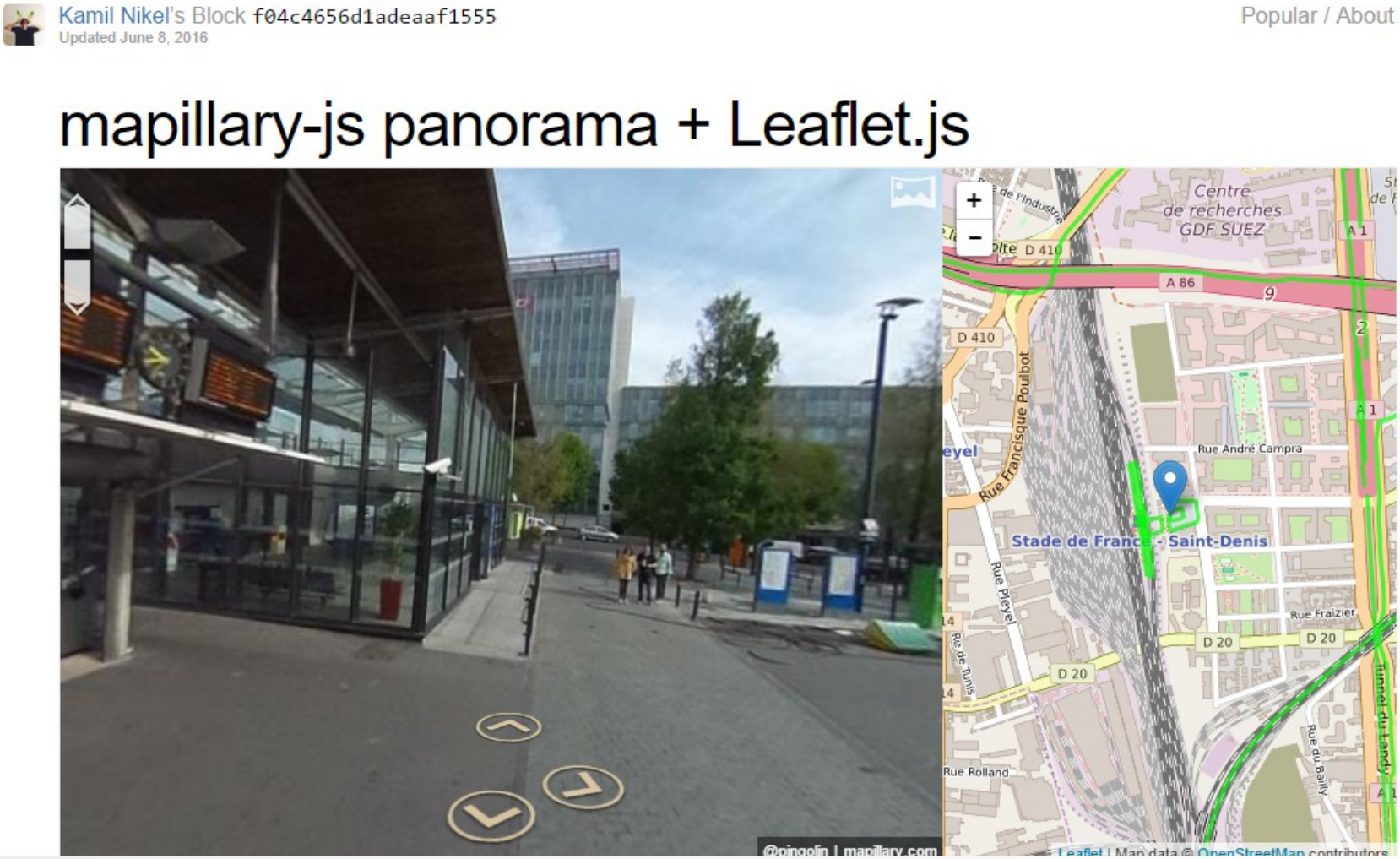
https://d3js.org/


Colle dell'Andria
50 m
Istituto
Leone
XIII
Via Francesco Crispi
Via Osservatorio
Via Elenuccia
Via Placida
Via Giuseppe
Monumento
alla Batteria
Masotto
Viale della Libertà
Via Gran Priorato
Via Setajoli
Scuola
primaria
"Francesco
Crispi"
Scuola
dell'infanzia
"Francesco
Crispi"
COSPECS
Università
degli
Studi
di Messina
Ufficio
Relazioni
col Pubblico
Palazzo
del
Governo
Questura
di Messina
Marina del
Marina
del Nettuno
Via San Giovanni Decollato
Via San Giovanni di Malta
Messina
9
Via Concezione
Fontana
del Nettuno
Piazza dell'Unità d'Italia
Via San Giovanni di Malta
Fontanella
CHIUSA
di Villa
Mazzini
Acquario
di Messina
Ragioneria
Territoriale
Dello
Stato
Via Fratelli Bandiera
Stazione
Carabinieri
Messina
Principale
Villa Mazzini
Agip
Via Giuseppe Garibaldi
Isolato
393
Isolato
385
34
Via Sant'A
Cavour
ribaldi
orio Emanuele II

https://osmbuildings.org/



https://github.com/mapillary/mapillary-js



https://tbicr.github.io/OfflineMap/

OfflineMap

Offline Map solution in web browser

View the Project on GitHub
tbicr/OfflineMap

This project is maintained by tbicr

Hosted on GitHub Pages — Theme by orderedlist

Leaflet offline maps with IndexedDB and WebSQL

Example and code.

Leaflet offline maps with PouchDB

Use Blob to storing.
Example and code.

Leaflet offline maps with PouchDB

Use base64 to storing and FileReader to convert Blob to base64.
Example and code.

Leaflet offline maps with PouchDB

Use base64 to storing and Uint8Array, btoa to convert ArrayBuffer to base64
Example and code.

Mapbox (Modest Maps) offline maps with IndexedDB and WebSQL

Example and code.

https://github.com/gpizzimenti/ODS16---Leaflet-Workshop

https://gpizzimenti.github.io/ODS16%20Leaflet%20Workshop/index.html

THAT'S ALL, FOLKS!

Lo Stretto Digitale

#ODS16 - Summer Edition - Messina, 03/09/2016

@opendatasicilia - @strettodigitale