

# S.LI.DES

## Smart strategies for sustainable tourism in Lively cultural DESTinations

2014 - 2020 Interreg V-A  
Italy - Croatia CBC Programme  
Priority Axis: Environment and cultural heritage  
Specific objective: 3.1 - Make natural and cultural heritage a leverage for sustainable and more balanced territorial development

### **Deliverable 3.3.2.**

## **Dynamic map of craft activities**

<b>Work Package:</b>	<b>3 - The S.LI.DES Smart Destination Ecosystem</b>		
<b>Activity:</b>	<b>3 - Mapping tangible and intangible cultural heritage, handicrafts and related CCIs</b>		
<b>Responsible Partner:</b>	<b>INSTITUTE FOR TOURISM</b>		
<b>Partners involved:</b>	<p>LP – University of Cà Foscari (IT)</p> <p>PP1 - Ciset (IT)</p> <p>PP2 - Ecipa (IT)</p> <p>PP3 - SIPRO Ferrara (IT)</p> <p>PP4 - City of Bari (IT)</p> <p>PP5 - City of Venice (IT)</p> <p>PP6 –CAST-University of Bologna (IT)</p> <p>PP7 – Institute for Tourism</p> <p>PP8- Craft College- Institution for adult education Subsidiary Rijeka</p> <p>PP9- Development Agency of the City of Dubrovnik-Dura</p> <p>PP10-Sibenik Tourist board</p>		

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## INTRODUCTION

The dynamic map is one of the deliverables (D3.3.2) expected in the S.LI.DES application form for WP3.3., together with the database of handcraft and CCI activities (D3.3.1) and the ranking/clustering of the selected activities (D3.3.3). Indeed, artisans, CCI businesses and local organisations, after being identified through the preliminary mapping analysis and the survey (D3.3.1), were georeferenced in a map and profiled/categorized according to several criteria. The information for building the dynamic map and the ranking was collected through the preliminary mapping activity and survey among artisans, businesses, and organisations that each partner city is carrying out (D.3.3.1).

This final report is specifically about D3.3.2 and it describes the characteristics of the dynamic maps and the methodological process that was implemented for building them.

### 1. Description of the dynamic map: aims and characteristics

The dynamic map (D3.3.2) aims at allowing policy makers - and possibly also stakeholders and visitors - to see mobility patterns and point of interests according to several filters.

First, starting from the mapping analysis and the information collected through the survey, **the dynamic map:**

- **displays** each of the identified handcraft and CCI Point of Interest - POI (artisans, craft and CCI businesses and organisations) **with a marker placed** on the map of the city;
- **visualizes additional information** about this POI (for example the name, the kind of product/activities, kind of activities/experiences offered to visitors, etc.), by clicking on the marker.

Secondly, **the dynamic map provides several filters**. In particular, by filtering according to the criteria identified in D.3.3.3, the dynamic map displays only the POIs that respond to the selected parameters. For example, if the user is interested only in the businesses/organisations related to a specific product (for example pottery) or to a specific kind of tourist experience (for example performance), he/she could select that parameter and the map returns the relevant POIs only. It is possible to filter also by a combination of criteria.

Thirdly, **the dynamic map integrates information from various sources**, in particular from mobility maps and sensors, TripAdvisor, other data included in the datahub such as Google Trends and the press reviews. In this way it is possible to:

1. see information for the handcraft and CCI POIs, identified with 3.3.1, but listed also in TripAdvisor;
2. see the POIs listed on TripAdvisor but not included in the set of 3.3.1, in order to view how many and which other attractions are present near a business / craftsman or along a route;
3. to have an idea about the size of visitor flows in the area near one POI (or a group of nearby POIs), in order to understand how this/these is/are placed with respect to the main visitor flows patterns (for example if it is located in a crowded area or in a transit area, etc.);
4. to understand if some dynamics in visitor flows around a POI (or a group of POIs) in specific days, periods of the year, times of day, are related to events have happened (or are happening) in the city;
5. to combine the information for policy making and promotion: for example, to design new possible itineraries in the city that integrate handcrafts and CCIs with the other attractions, or distribute events along time to prevent overcrowding;
6. to represent the consequences of events or policies in terms of visitor flows and TripAdvisor reviews and photos over a set of POIs.

## 2. How to implement the dynamic map: technical aspects

### 2.1. Parameters of a dynamic map

A dynamic map is defined with respect to the following parameters:

- Static parameters:
  - the reference city;
  - a set of POIs;
  - the geographical coordinates of the corners that delimit the map;
  - an identifier for querying Google trend.
- Dynamic parameters:

- an initial and a final observation date;
- a sampling interval, e.g., day, week, month;
- an initial and a final date for news.

## 2.2. Appearance of the dynamic map on the dashboard

The appearance of the dashboard page that includes the dynamic map included:

- five text fields/combo boxes where the user can insert the dynamic parameters (dates and sampling interval);
- a map that visualizes:
  - the location of POIs and sensors;
  - the information that can be derived from the sensors between the initial and the final observation date.
- some graphs that describe, for each sampling interval between the initial and the final observation date (e.g., for each day between the 13/03/2020 and 31/03/2020), the evolution of:
  - the overall Tripadvisor number of reviews/review rating counts/photo count (if available) given by the visitors of the POIs;
  - the data collected by the sensors, e.g., the overall number of visitors counted by the cameras.
- a list of the news appeared between the initial and the final date for news;
- a set of links that allow the user to download the data visualized in the graphs and about the POIs;
- a link to Google trend. The link should query Google trend about the Google identifier between the initial and the final date for news - e.g., for the identifier %2Fm%2F07\_pf (corresponding to the city of Venice) between initial date 01/09/2020 and final date 22/10/2020  
[https://trends.google.com/trends/explore?date=2020-09-01%202020-10-22&q=%2Fm%2F07\\_pf](https://trends.google.com/trends/explore?date=2020-09-01%202020-10-22&q=%2Fm%2F07_pf)

In addition, the user are able to visualize the data of the POI described in a previous document by clicking on the POI of his/her interest.

### 2.3. Data for a dynamic map

The TripAdvisor data for the dynamic maps are already present in Symphony.

The data from the survey and from the cameras that will be included in Symphony.

The collection that includes the static parameters of the possible dynamic maps. An example of this collection is file DynamicMapSetsExample.json attached to this document.

A possible example of json object including the parameters of a dynamic map is the following:

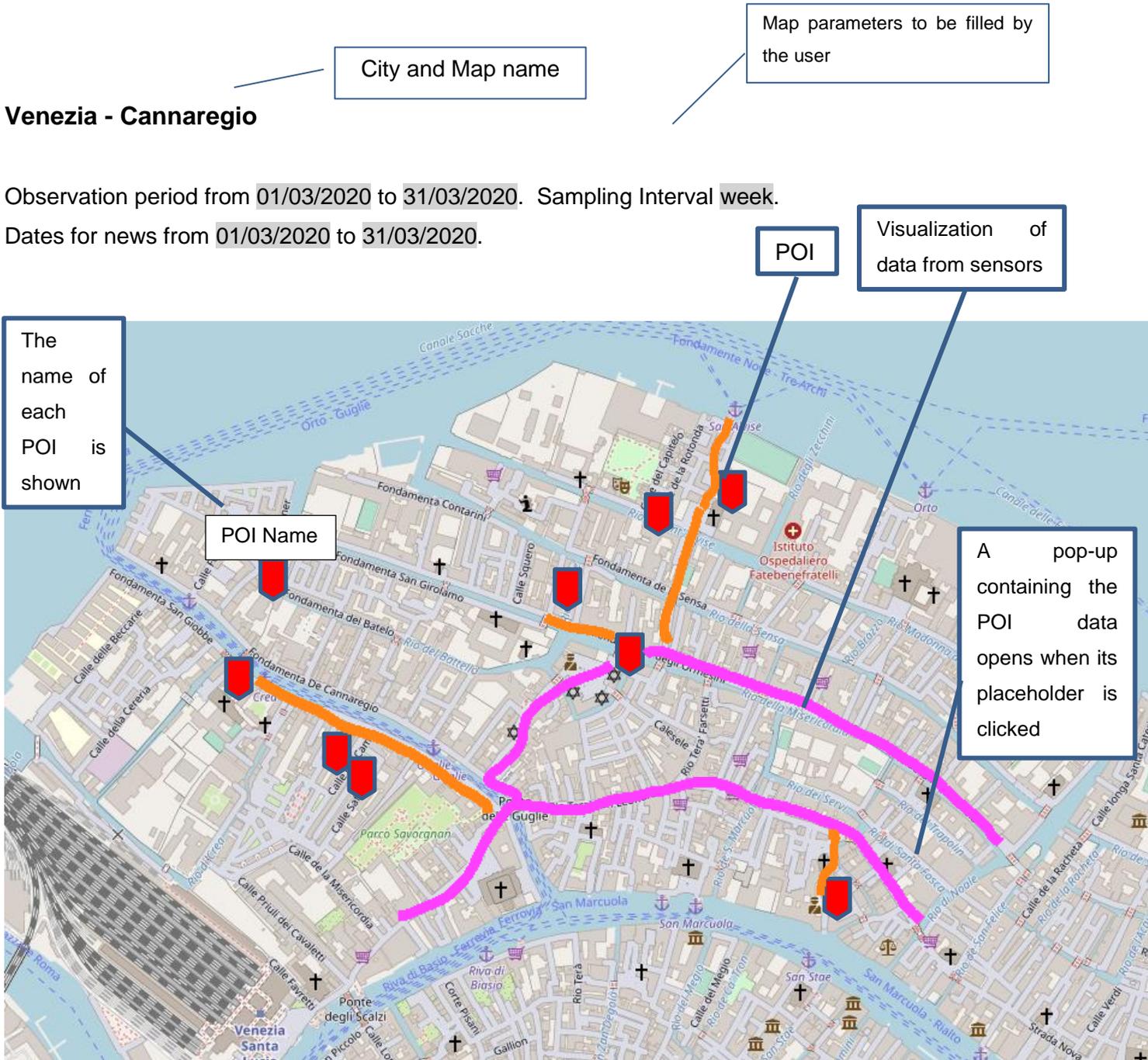
```
{
  "Table": "DynamicMapSets",
  "City": "Venezia",
  "MapName": "Centro storico di Venezia",
  "POIs": [
    {"Id": "Survey id1", "location_id": "TripAdvisorId1"},
    {"location_id": "TripAdvisorId2"},
    {"Id": "Survey id3"},
    {"Id": "Survey id4", "location_id": "TripAdvisorId4"}
  ],
  "MapID": [
    45.4369,
    12.3334,
    45.4317,
    12.3421
  ],
  "GoogleTrendId": "%2Fm%2F07_pf"
}
```

Note that a POI is identified by either its SurveyId, if it has been interviewed during the survey, or by its TripAdvisorId, if it is registered in trip advisor, or by both identifiers.

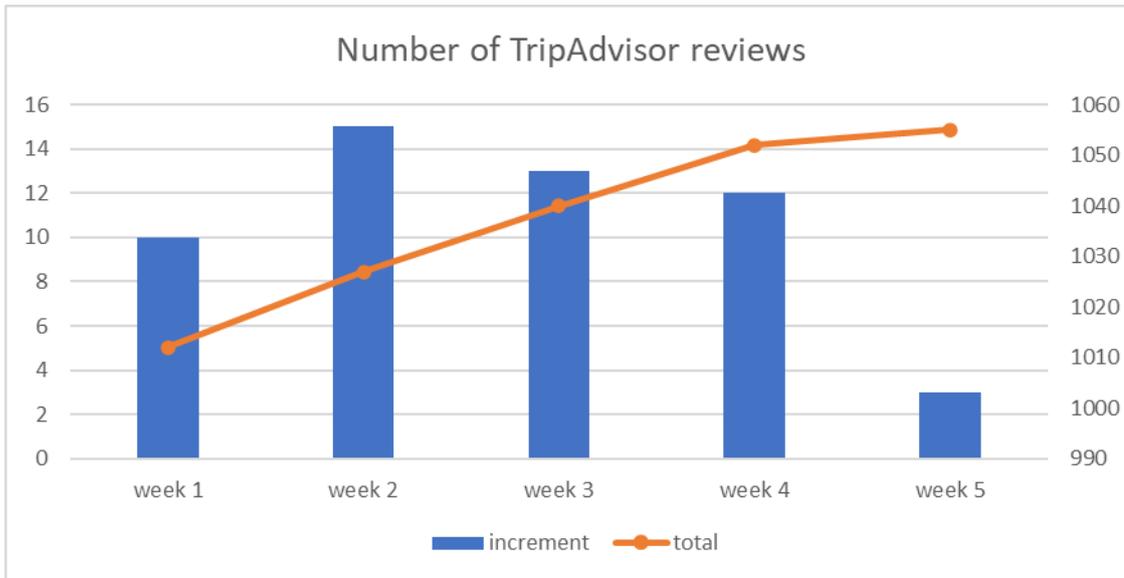
## 2.4. Sketch of a possible dashboard dynamic map page

### Venezia - Cannaregio

Observation period from 01/03/2020 to 31/03/2020. Sampling Interval week.  
 Dates for news from 01/03/2020 to 31/03/2020.



Download POIs' data [here](#).

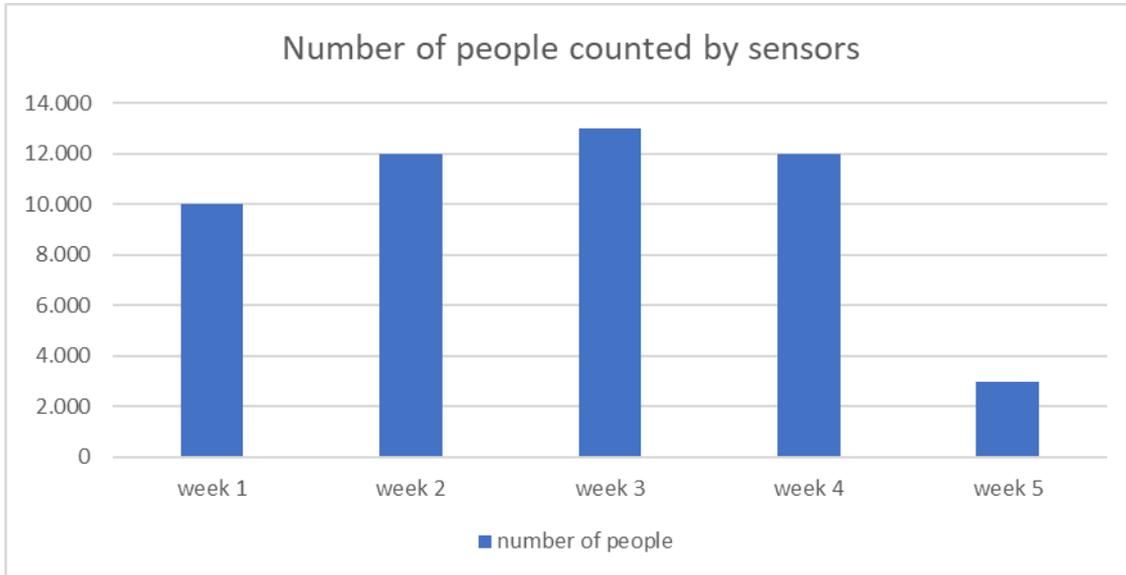


Download graph data [here](#).

.....

<Other graphs>

.....



Download graph data [here](#).

.....

A Google trend page opens when this link is clicked

[Google trend link](#)

This list is scrollable

News:

- 1/3/2020
  - [Title 1](#)
  - [Title 2](#)
  - ....
- 2/3/2020
  - [Title 1](#)
  - [Title 2](#)

The full text of the rss object is displayed when the object title is clicked

## 2.5. Data preparation

Different sources of data were pre-processed to be readily and accurately analysed.

This section describes the sources of data (except for the data on the visitor flows) and the preparation operations that were needed. The preparation operations were carried on by an appropriate program with a GUI interface.

The sources of data for each of the five cities involved in the project are:

- An Excel folder, hereinafter referred to as *ShopFile*, that includes a list in first normal form of POIs corresponding to artisan workshops/craft or speciality shops, each of which characterized by a unique primary key, hereinafter referred to as *Id*.
- A csv file, hereinafter referred to as *GFFile*, output of the Google form used to survey the artisan workshops/craft or speciality shops in the ShopFile.
- A json file, hereinafter referred to as *TAFfile*, that includes the objects describing the POIs present in the TripAdvisor database, each of which characterized by a unique primary key, hereinafter referred to as *location\_id*.
- An Excel folder, hereinafter referred to as *SetFile*, that in each sheet presents a table (see Fig. 1) in first normal form listing the POIs included in selected subsets of the union of the POIs in ShopFile and TAFfile. The records of the tables are made of three fields:
  - POI's name;
  - POI's *location\_id*;
  - POI's *Id*.

In each record at least one of the fields *Id* and *location\_id* must be not null. Each sheet of the SetFile may include also a GoogleTrendId associated to the list of POIs in the very sheet.

name	location_id	id
Parrocchia S. Michele Arcangelo a Palese	13202381	
Chiesa di San Giovanni Crisostomo	7050243	
Parrocchia di Santa Maria del Campo e della Pieta	15297989	
Chiesa di San Sebastiano	12839779	
Patronato di Venere	13203723	
Chiesa di Maria Santissima Addolorata	13203727	
Oasi San Martino	15317908	
Chiesa di San Giorgio degli Armeni	13815039	
Basilica Parrocchia Santa Fara	11548908	
Chiesa Cattolica Parrocchiale S. Francesco D'Assisi	12948547	
Moschea di Bari	17478538	
Chiesa di S. Giuseppe	10596715	
Chiesa Sacro cuore	16342857	
Chiesa di San Carlo Borromeo	12948541	
Chiesa di San Ferdinando	16342371	
Arciconfraternita Maria Ss Del Rosario	11886997	
Arciconfraternita di San Giuseppe	12941398	
Chiesa di San Michele Arcangelo	10375960	
Chiesa di Santa Teresa dei Maschi	8874126	
Chiesa di San Giacomo	10256867	
Chiesa del Gesu	12941366	
Chiesa San Marco dei Veneziani	8874097	
Chiesa di Sant'Anna	12941364	
Basilica San Nicola	246482	
Chiesa di Santa Chiara	10375948	
Colonna dell'Annunziata	12491865	
Chiesa di Stella Maris	13202384	
GoogleTrendId	q=%2Fm%2F0c66m	

Figure 1: A table of POIs in SetFile

The data in the above files were cleaned, fused and, possibly, augmented a little to be elaborated in the dynamic maps. Specifically, the data preparation operations produced the following three files:

- An Excel file, hereinafter referred to as *AnsFile*, which reports a table with a record for each POI in SETFile. Each record must include data about the POI reported in ShopFile, GFFile and TAFfile;
- A json file, hereinafter referred to as *JAnsFile*, that includes the data in AnsFile formatted as the json objects described in the attached JAnsFileExample.json file;
- A json file, hereinafter referred to as *JSetFile*, that includes the lists in SetFile formatted as the json objects described in the attached DynamicMapSetsExample.json file.

## Data Cleaning step

The data in the TAFile describe 2414 POIs and needed cleaning since, e.g.:

- Duplicates are present.
- 278 POIs have wrong geographic coordinates, latitudes with values less than 15° are reported.

## Fusion step

The data in AnsFile were organized in a table in first normal form whose fields are reported in the attached AnsFileFields.xlsx.

## Augmentation step

If a POI is not present in the TAFile, its geographic coordinates are not available as they cannot be derived from the other data source files. In this situation, its geographic coordinates were inserted in the AnsFile and in the JAnsFile possibly by direct intervention of a human operator.

The MapID geographic coordinates of each list in the JsetFile were computed by default as follow:

- The latitude of the north-west corner of the map must be set equal to the northernmost latitude value of the POI in the list plus 0.0005°;
- The longitude of the north-west corner of the map must be set equal to the westernmost longitude value of the POI in the list minus 0.0005°;
- The latitude of the south-east corner of the map must be set equal to the southernmost latitude value of the POI in the list minus 0.0005°;
- The longitude of the south-east corner of the map must be set equal to the easternmost longitude value of the POI in the list plus 0.0005°.