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# SERRATE

## Sustainable RuRAI Tourism Engine



**AI-powered web solutions**

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**Challenge:** Data-driven stimulation & management of rural tourism flows

Paris, 19 May 2022

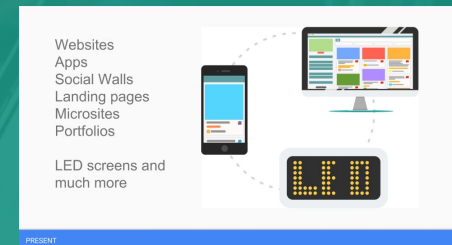
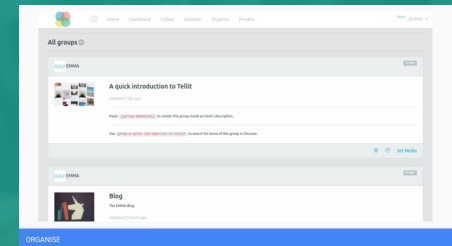
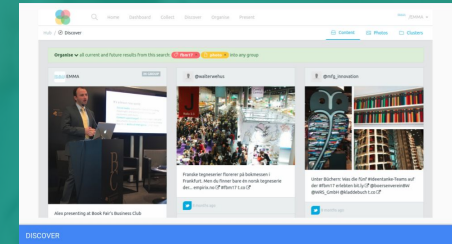
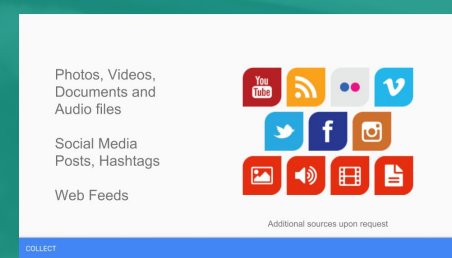
# About IN2

We are software people with many years of experience in AI who **design, develop and operate web-based solutions at scale.**

We build cutting-edge scalable solutions related to **data and content aggregation, processing, transformation, presentation and exchange**  
We enable content data value chains

**Full stack:** Backend services + User interfaces and interaction, Development + Operations on our private cloud and/or public clouds

Track record: <https://in-two.com/projects>



# MyMeedia

## IMPORT and PROCESS

- Import everything: from multimedia files, documents and photos, to social streams, web feeds, third-party APIs and open data.
- Advanced AI content indexing and analysis components in MyMeedia crunch all content to make sense of the data, extract additional information and enable powerful search and retrieval components.



<https://in-two.com/platform>

# MyMeedia

## ENRICH and ACCESS

- Easy to use tools to geotag, annotate and enhance your content with additional keywords, tags and relevant metadata.
- All content is always readily available. With the MyMeedia API developers can easily build rich user experiences and interactive applications without worrying about the underlying content infrastructure



<https://in-two.com/platform>

# SERRATE

- Tackle overcrowded tourist hotspots and motivate people to visit non-mainstream destinations through personalised recommendations and storytelling
- The right narrative at the right time, in the same channels used by tourists
- App for tourists (end-users); “cockpit” for DMOs (customers)



COMUNE DI CARRARA  
Decorato di Medaglia d'Oro al Merito Civile



■ ■ ■ fondazione  
sistema toscana



FRANKFURTER  
BUCHMESSE



INTERNET  
FESTIVAL  
FORME DI FUTURO



Fondazione had a fruitful collaboration with IN2 on several different occasions. The IN2 team is very focused on developing technology tailored to the needs of end-users and DMOs which deal with the digital promotion of complex and world-famous destinations, like in our case the Tuscany region.

– Adriana De Cesare, Head of Unit at FST



# Technical scope

- Integrate **cross-domain data sources** like real-time sharing of posts on social media around the region of Valencia with info about the specific points of interests, search keywords; in order to
- **Extract sentiment, keywords, topics** using AI (e.g. NLP, image recognition) technologies from these posts,
- Matching them with a curated and extendable **storytelling knowledge base** about activities (outdoor / nature, culture, gastronomy, actual local events, e.g. festivals) and
- Replying to the same medium or social network with a relevant story **motivating tourists** to undertake activities outside of the main touristic hotspots.

# Data Value Chain



## Sources

- The dataset from Turisme Comunitat Valenciana – INVAT.TUR that provides mentions in social networks for different points of interest, per month, for different product categories as a filter for the type and amount of posts that SERRATE will consider relevant
- Weather data using <https://www.weatherapi.com/>
- OpenStreetMaps for identifying several points of interest from different regions of Valencia
- Maestrat&Go dataset that provides mobility and user experience, including userID, date, point of interest, geoposition, objectives (check-ins done in that point of interest), and ratings to build a more accurate user profile.
- Advertising campaign keyword lists (mobile, laptop) for Valencia

# Data sources - INVAT.TUR

Social Network mentions of Inland tourism products in Valencia Region, per month and point-of-interest.

Points of interest (Culture)		Absolute	Jan-21	Feb-21
El Castell de Guadalest	Historia y patrimonio	18.9	9.6806	5.7513
Castell de Xativa	Historia y patrimonio	15.6	7.9903	4.7471
Castillo de la Atalaya	Historia y patrimonio	8.9	4.5586	2.7083
Palacio de los Condes de Cervellón	Historia y patrimonio	6.7	3.4317	2.0388
Santuario de Santa Magdalena	Lugares de culto	6.7	3.4317	2.0388
Museo Micro-Gigante	Museos	4.4	2.2537	1.3389
Castillo de Biar	Historia y patrimonio	4.4	2.2537	1.3389
Puentes Colgantes	Obras de ingeniería y arquitectura	3.3	1.6903	1.0042
Castillo de la Mola	Historia y patrimonio	3.3	1.6903	1.0042
Iglesia de Nuestra Señora de la Asunción	Lugares de culto	2.2	1.1268	0.6695
Casco Antiguo de Bocairent	Historia y patrimonio	2.2	1.1268	0.6695
Casa Museo Modernista	Museos	2.2	1.1268	0.6695
Museo Etnológico Casa típica del siglo XV	Museos	2.2	1.1268	0.6695
Antonio Marco Dolls Houses Museum, Guadalest	Museos	2.2	1.1268	0.6695
Castillo de Castalla	Historia y patrimonio	2.2	1.1268	0.6695

## Mentions

```
{
  "Destino": "Comunitat Valenciana",
  "Fecha": "2019-09",
  "Reino Unido": 4740,
  "España": 35059
}
```































## Searches

```
{
  "Destino": "Valencia",
  "Fecha": "2019-09-01",
  "Reino Unido": 4959,
  "España": 50054
}
```



# Data sources

## OpenStreetMaps API / Tourism POIs

Key	Value	Element	Description	Map rendering	Image	Count
tourism	alpine_hut		A remote building located in the mountains intended to provide board and lodging.			7 232  6 253  30 
tourism	apartment		A furnished apartment or flat with cooking and bathroom facilities that can be rented for holiday vacations.			43 855  15 982  166 
tourism	aquarium		A facility with living aquatic animals for public viewing.			556  566  22 
tourism	artwork		A public piece of art.			181 176  11 736  688 
tourism	attraction		An object of interest for a tourist, or a purpose-built tourist attraction			144 351  62 031  4 531 

## Maestrat&Go

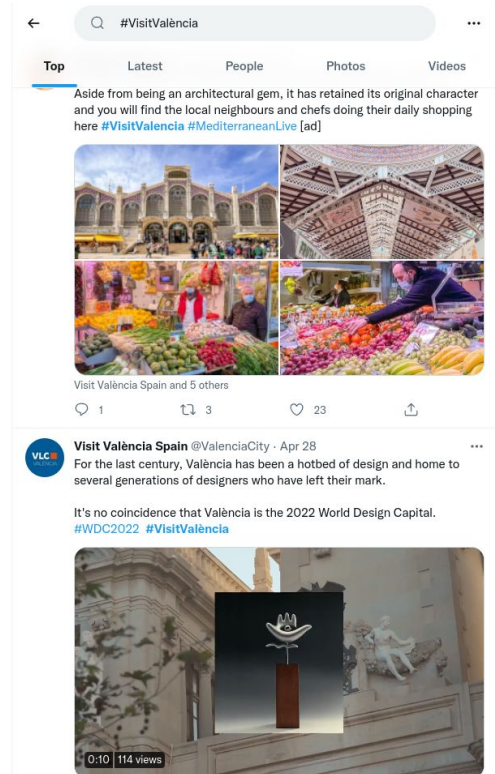
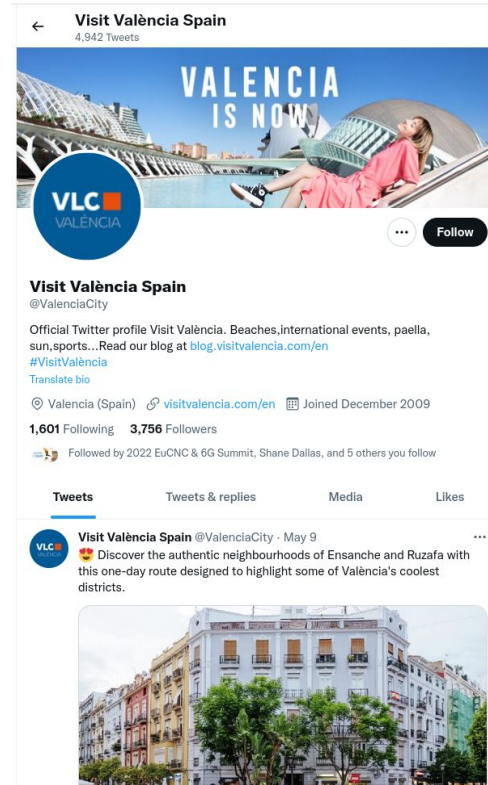
```
userID;mission.location.lat;mission.location.lon;mission.name;rate;data
611bcf0160ccc20a7caa270d; 40.466147;0.179718;Horno Medieval - Tourist Info Sant
Mateu;5;2021-08-17T15:02:00.000Z
5fbd083053a2130a778b90ce; 40.531782;0.151948;Moles de Xert;5;2020-12-17T09:33:31.000Z
5fe22c0053a1a90a8afbc580; 40.589508;0.249306;Àrea Interpretativa Olivos Milenarios
Rossell;1;2021-10-03T18:36:58.000Z
5fdc89d553a1a90a8afbc019; 40.523728;0.289381;Porcellet;5;2020-12-18T10:56:19.000Z
5faf929353a2130a778b821d; 40.524428;0.290019;Bar Juanita;5;2020-11-19T09:23:59.000Z
```

## Weather API

```
"current": {
  "last_updated_epoch" : 1613896210 ,
  "last_updated" : "2021-02-21 08:30" ,
  "temp_c" : 11,
  "temp_f" : 51.8,
  "is_day" : 1,
  "condition": {
    "text": "Partly cloudy" ,
    "icon": "///cdn.weatherapi.com/weather/64x64/day/116.png" ,
    "code" : 1003
  }
}
```

# Data sources - Social posts

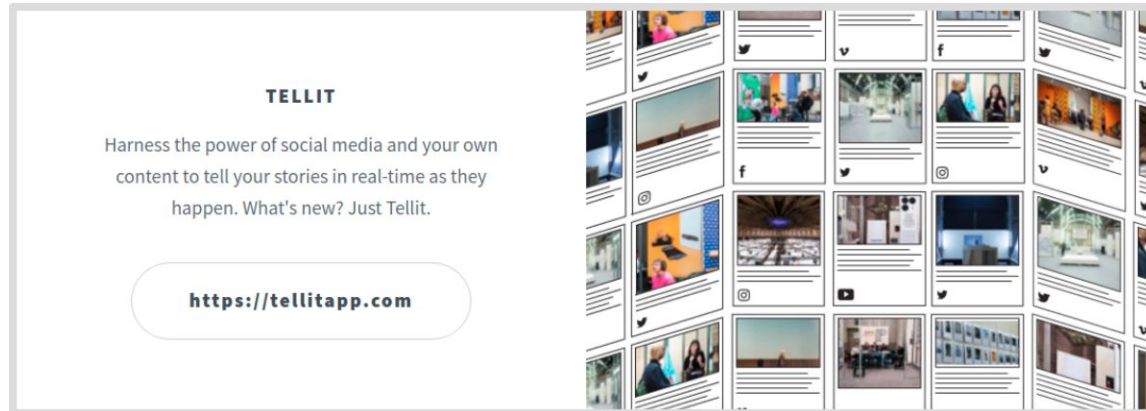
- Social posts guided and filtered based on
  - Advertising campaign keyword lists (mobile, laptop) for Valencia
  - List of touristic providers in Valencia



# Data sources

## Storytelling knowledge base

- Customise IN2's storytelling platform Tellit (<https://tellitapp.com/about>) to serve as the story knowledge base around regions of interest. Stories in Tellit are able to be created on the platform, but also harvested from tourist providers' websites using RSS or from their social media posts. For a list of tourist providers we will use the dataset of public catalogues of Valencia tourism companies.



# Data Value Chain



## Processing and Enrichment - Algorithms and tools

- Based on existing IN2 technologies for AI processing and enrichment integrated in flexible processing pipelines
  - Mymedia platform – <https://in-two.com/platform>
  - VIDE (Time-coded metadata, chapters, topics, keywords) – <https://vide.in-two.com/>
    - EDI incubator finalist
  - EMMA – Enriching Market solutions for content Management and publishing with state of the art multimedia Analysis techniques – <https://emma.in-two.com>
  - Murrel – AI-based summaries of Twitter timelines and lists – <https://murrel.social/>
- We plan also to investigate the use of the REACH services:
  - Formal Software V&V (<https://reach.iti.upv.es/services/30>) and
  - FedEHR (<https://reach.iti.upv.es/services/26>)





# User experience

Signup using Twitter providing read access to tweets.

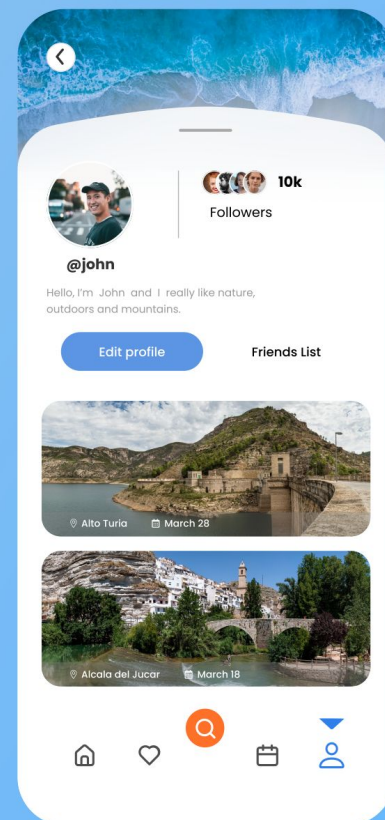
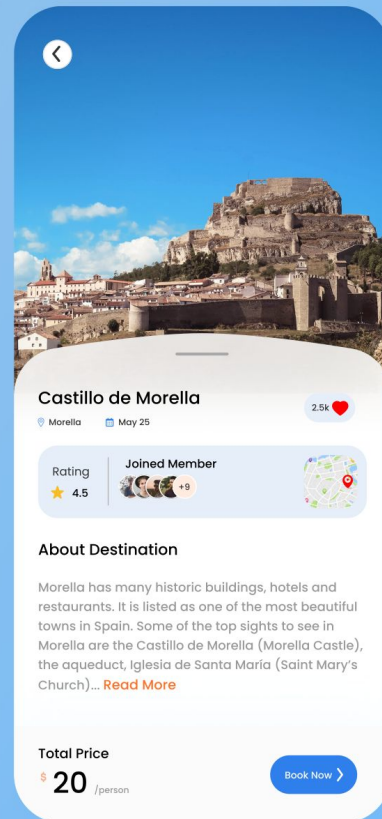
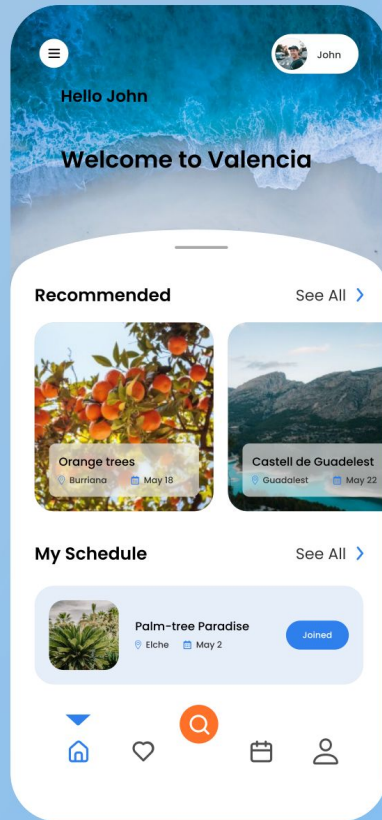
SERRATE bootstraps a user profile based on bio, posts, created lists, favourites and RTs.

Get personalised trip recommendations based on the user profile, current location and weather.

Build a list of activities liked as a (future) reference.

Connect with people who liked same trips

SERRATE updates the user profile dynamically based on relevance feedback, likes, and connections



## Open Data



## Restricted/Closed data DMO owned



## Acquired data





# Scalability and flexibility of the solution

- Modular architecture that can be extended and customised to include additional sources from new DMOs and data providers
- Horizontal scaling
  - Develop REST-based and stateless services
  - Package computing intensive components AI/machine learning algorithms used for extracting features, topics, and recommendations in individual docker containers that can be deployed on-demand
- Use own infrastructure + AWS/Google Cloud (when needed)
- Monitoring load and other critical metrics using InfluxDB and CloudWatch





# Data governance and legal compliance

- Follow principles of “privacy and ethics by design”
  - Profiles of places: completely agnostic and don’t require storing any personally identifiable information
  - Profiles of users: explicit and informed consent for the purposes of use; GDPR rights
- Operate a firewall for each server that allows only specific ports to be open (e.g. port 22 for ssh, 80 for http and 443 for https) and only specific IPs to access other services.
- Only allow connections using the SSH key-based authentication mechanism.
- During data transfer only secure protocols are used (e.g. https).

# Let's Experiment :)



To realise the Data-Value-Chain for tourism first in Valencia and then worldwide

- Cross-domain data aggregation:
  - REACH datasets + open datasets (OSM + Weather API) + user-generated data + local knowledge and stories from stakeholders
- Processing and Enrichment
  - AI tools, profiles of places and profiles of users
- Sharing and exchanging
  - App for visitors, and “cockpit” touristic authorities and DMOs



**AI-powered web solutions**

<https://in-two.com/contact>