

# Data Integration and Visualization



**EVENTFUL**

# Team Members

Pablo Darós Pallarés (100451113)

Ana Fernández Vega (100451209)

Jorge Lázaro Ruiz (100452172)

Pablo Savina Pastor (100452332)

# Project Definition

## Description

Eventful is a web page which displays useful information about your favorite concerts and artists. Price information, most popular songs, artist information..., all come together in a single webpage, visual and easy to use.

## Domain

We work within the domain of music concerts and artists.

# Data Sources

## Ticketmaster

We use it to find information about concerts

## Spotify

Used for artists (popularity, most popular songs, album information...)

## Setlist

Used to find the most played songs at concerts

## Genius

Extracts lyrics from an artist's songs

# Data Selection & Type

## One Dimensional

Artist name. Concert name, price, genre, setlist and additional services included. Song name, number of times played, lyrics, popularity rating. Album name.

## Two Dimensional

Country, city and venue of a concert. Latitude and longitude of the location

## Temporal

Date and time of a concert.

# Problem Characterization

Why will the data be used?

We have detected the need for a visual interface that allows users to find all the information regarding a concert and its artists, to maximize their enjoyment.

Who will use the data?

Eventful is meant for everyone who likes to attend concerts, from teenagers to adults. It is also useful for artists who want to promote themselves and their concerts.

How will the data be used?

Eventful will display information relevant information of an artist and its concerts, and allow the user to locate the best possible concert and price.

# Problem Characterization

When will the data be used?

Eventful can be used anytime! There are always artists playing in concerts, so our objective is to be always available and up to date with the hottest concerts.

Where will the data be used?

Eventful will be mainly used on computers, where our users can analyze everything about their favorite artists slowly and calmly. We will also expand to mobile phone apps in the future.

# Problem Characterization

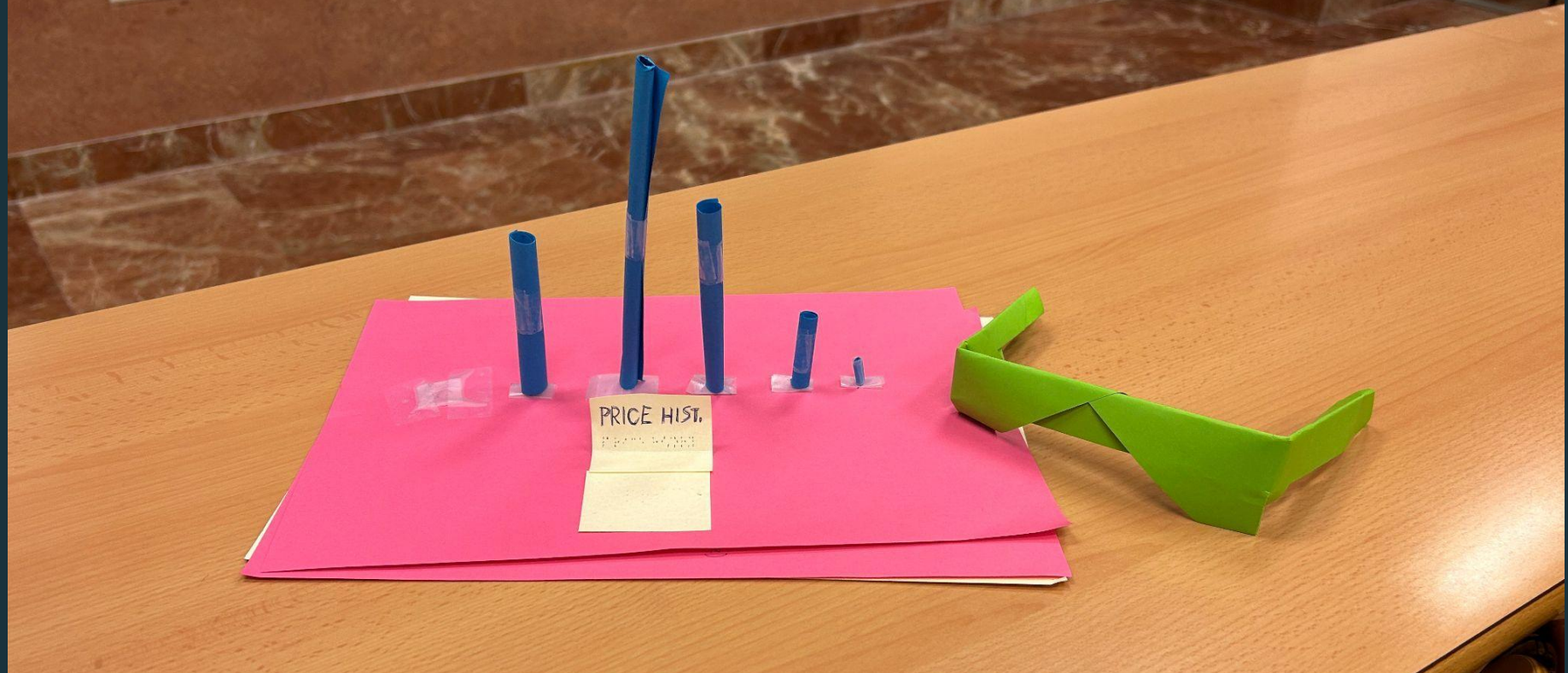
What will the data be used for?

We want to answer the following questions.

- When will my favorite artist play next? Where will he/she play?
- What will the tickets cost? Is this price higher or lower in other venues?
- What are the songs most likely to be played by this artist in the event? How popular are these songs, for example in Spotify?
- What are the lyrics of these songs?

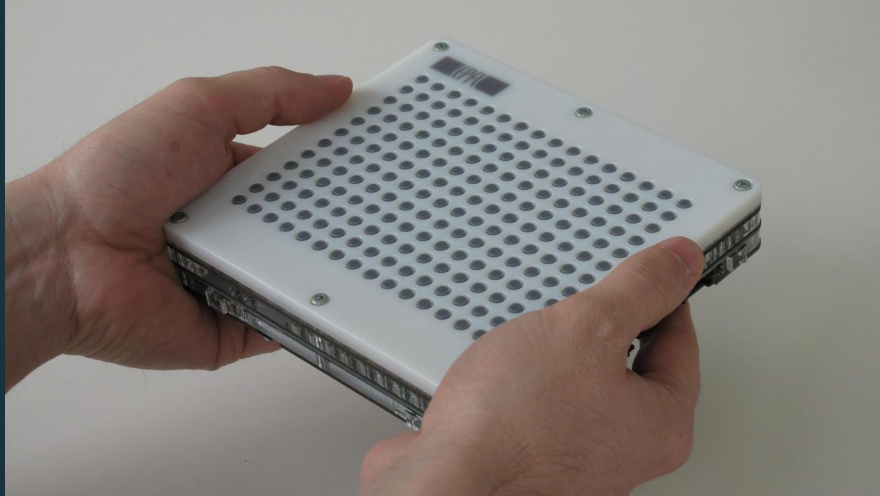


# Assumption Reversal



# Assumption Reversal

We have designed a tablet which creates 3D shapes according to the data that the user wants to see. We will use it to show the price history of a concert, or the concerts of an artist. The tablet will deform and transform into the desired graph, which the user can physically touch and feel. The tablet can also emit different levels of heat, so the user can tell which data is more important.



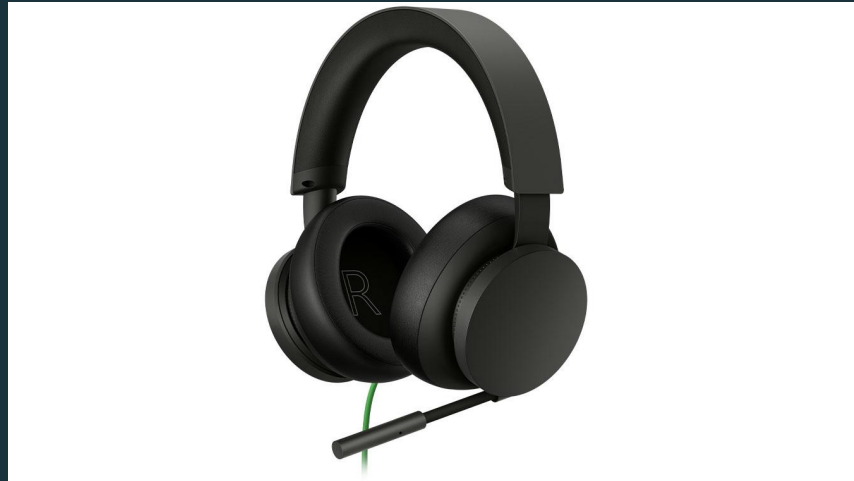
# Assumption Reversal

We have also developed glasses which simulate what a user would see in the concert. We want to avoid any type of discomfort these users can feel due to the blinding lights of concerts, so we give them the chance to experience it themselves beforehand. We have designed the glasses specifically for people with partial blindness, although they can be used by anyone!



# Assumption Reversal

Finally, we have also designed a software that simulates the amount of noise that the users will experience at a concert, so they can know in advance if it is too overwhelming.



# Ethical Design

At Eventful, we believe that everyone, no matter their context, should be able to attend a concert and obtain the maximum enjoyment out of the experience. We have detected three main areas in which ethical improvements to the concert industry can be introduced: prices, transparency, and disability support.



# Ethical Design - Disability Support



Disabilities of all kinds prevent people from going to concerts. Even though many venues have been adapted to physically disabled people, much progress can be made in other areas.

At Eventful, we have developed functionalities that allow users to understand if a concert will be suited for them. People with partial blindness can check if the lights of a concert will be uncomfortable, and people who cannot stand loud noises can hear a simulation of the acoustics of a concert.

Furthermore, our visualization provides necessary information regarding the accessibility services of each venue.

# Ethical Design - Prices



It is no secret that concert prices have become extremely high and volatile in the last few years. This has made it impossible for some people to attend concerts of popular artists, or at least to do so in an enjoyable way.

Our mission at Eventful is to show the lowest possible prices for an event by comparing them across multiple sources. Furthermore, we provide the possibility of visualizing all of the concerts an artist performs, and comparing prices in different venues and moments of time.

This will allow users from less favoured economic backgrounds to attend concerts

# Ethical Design - Transparency



Will I find parking? Will I be paying ticket fees? Is the venue accessible by wheelchair? Too many times, users cannot find the answers to these questions, since they are buried alongside mountains of data.

Some people using software tools such as Eventful are not proficient at navigating them, and they are vulnerable to missing relevant information. We have thus created a simple and visual piece of software, which everyone can easily navigate.

This will be especially beneficial for elderly people.



# Ethical Design - ART Principles

## Accountability

As a product whose success ultimately depends on providing a quality service to the users, Eventful needs to make every design decision with the well-being of users in mind.

## Responsibility

Eventful does not need the user's personal data to operate. If it were to use it in later versions, it would only do it with a clear and explicit purpose, and guaranteeing confidentiality and privacy. The webpage is simple to navigate, so that less skilled users do not struggle using it.

## Transparency

Eventful's sources of information and procedures to generate visualizations are publicly available, so that users can validate our design decisions if they need to.

# Prototype - Information

We worked with three main groups of information: artists, concerts and songs.

We decided to create two different flows of navigation for the web page.

- The first goes through the artists and songs, by selecting the artist and then visualizing its most popular and most played songs. It contains a page for artists and another for a specific artist.
- The second goes through concerts, one of which is selected to see its information. It contains a page for concerts, and another for a specific concert. Additionally, selecting a concert will indirectly select its artist, so this second navigation flow is followed by the first if the user desires it

Note that in the final code there are not four different pages, since everything is compacted into a single one.

## Prototype - Artists

Artists are a small discrete set of people. Thus, the best way of visualizing them was through their images, which we arranged in a bubble map, in which bubble size is proportional to its corresponding artist's popularity.

The bubble map gives an overview of the artists with scheduled concerts, and allows the user to obtain details-on-demand by clicking on the artist's bubble. Note that in the actual code, this is done by clicking on the desired element of the list next to the bubble map.

# Prototype - Artists

Overview

Details-on-demand

## TOP ARTISTS

1. Taylor Swift
2. The Weekend
3. Peso Pluma
4. Doja Cat
5. Olivia Rodrigo
6. Travis Scott
7. Zach Bryan
8. Lana del Rey
9. Kanye West
10. SZA
11. Junior H.
12. 21 Savage
13. Post Malone
14. Justin Bieber
15. Ed Sheeran
16. Bruno Mars



## Prototype – Specific artist

Given an artist, visualizing his/her most played songs is equivalent to visualizing a comparison between a few items in a single variable (in this case, amount of times a song is played). Thus, a simple column chart is the best way to view this information.

To visualize a song, that is, its lyrics, we created a word cloud. The word cloud shows in a simple glance the most important aspects of a song.

In this page, we have a deeper level overview of data, details-on-demand by clicking on a drop down menu to select a song's lyrics, and the ability to relate elements with the column chart.

# Prototype - Visual Elements (specific artist + songs)

Overview (2)



Taylor Swift



Cruel Summer



Blank Space



Anti-Hero



22



Cruel Summer ▼



# Prototype – Concerts

A concert is defined by its location and date. Thus, a combination of a spatial visualization, a map, and a temporal visualization, a timeline, was ideal to show concerts. These are placed as markers in the map, which only shows concerts in a specific time interval.

We thus obtain an overview of the available concerts. We can use the map to zoom into specific information, and the timeline to filter that information. Furthermore, we have details-on-demand by clicking on a specific marker.

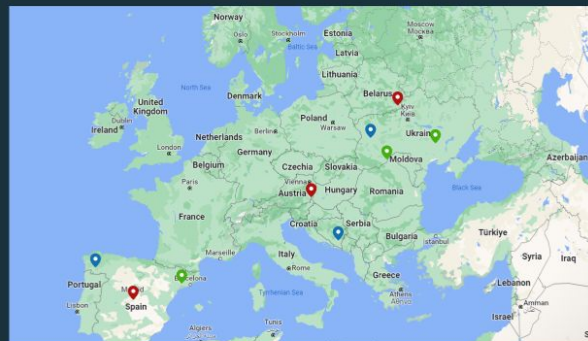
# Prototype - Visual Elements (concerts)

Overview

Zoom

Filter

Details-on-demand





## Prototype – Specific concert

The information for a specific concert usually consists of singular pieces of data (parking availability, accessibility services, date and venue, predicted songs...), which are simply shown to the user.

It is possible to compare prices of a concert across different venues. Since this is a comparison between a few items in the same variable, price, we use a column chart again.

Thus, we have a deeper level overview, and the ability to relate thanks to the column chart

Note that in the final code, the song prediction algorithm has not been implemented, though it would be an interesting addition to a more sophisticated webpage.

# Prototype - Visual Elements (specific concert)

Overview (2)

Relate



Taylor Swift - The Eras Madrid



Song prediction



Cruel Summer



Blank Space



Anti-Hero

Price comparison



# Additional design guidelines followed

## Storytelling

As expressed in the ethical values section, Eventul's objective is letting users make more informed decisions regarding a concert. When a concert is announced, most of the necessary information about it is difficult to find or understand in a simple way. With Eventful, everything that goes around a concert (predicted songs, artist popularity, price evolution...) is integrated into a single narrative, which allows the user to really see what they need to consider before buying tickets

## Visual information seeking mantra

Our concert flow strictly follows the mantra (overview -> zoom/filter -> details-on-demand), whereas the artist/song flow skips the middle step (overview -> details-on-demand)

# Additional design guidelines followed

## Integrity principles

We have maximized data density by creating minimalistic visualizations, in which the only aesthetical elements are those used to make the navigation experience a pleasant one. Furthermore, we have compacted all of the dense data into visualizations that contain a lot of information, such as the map + timeline.

## External links

As part of our effort to provide a complete experience to users, we rely on external applications to provide additional information. Clicking on a venue name will redirect to its location on Google Maps, and clicking on an album cover will lead to the corresponding album on Spotify

## Note regarding the code

The code closely mirrors the prototype, except in a particular instance. The ability to click on a bubble to obtain the details of an artist and his/her songs has not been implemented.

Thus, we only have one of the navigation flows of the prototype in the code. The user selects a concert in the map, obtains information about the concert, and then obtains information about the artist and his/her songs.

The bubble graph can still be found below, implemented in the same way as described in the prototype.

To run the webpage, execute the “app.py” file. Before, make sure to execute the command “pip install -r requirements.txt”.

# What have we used in the code?

## BLOCK 1

PYTHON

SPOTIPY

TICKETMASTER API

SETLIST API

SPACY

BEAUTIFULSOUP -> GENIUS

## BLOCK 2

PYTHON

DATA FROM BLOCK 1

DASH

PLOTLY

CSS

**Please continue to the demo!**