Process Book

ViReal

OUR PATH:

We started our journey by looking for an interesting topic for our visualizations. We looked on the internet for available databases and discussed what could be a topic that touches all the group members in our daily lives. Coffee came up as an interesting topic, both for its technicality and its complexity. We found datasets on agriculture, economy, and gastronomy, all focusing on coffee. Those findings educated us on coffee, both as a plant and as a beverage.

Once the topic was chosen, we took an afternoon to create sketches of the diverse visualizations that were possible, given our collection of datasets. We discussed their complexity, their integration to our website, as well as how we could create a global aesthetic that could harmonize all of them.

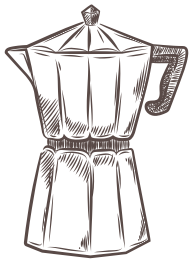
With the datasets and the sketches, we first had to create a simple, robust template for our website. We all agreed on splitting the website in different sections in order to be able to later integrate each component in the easiest manner.

For the next step, each group member got assigned a few visualizations to implement. Each of them required a bit more data processing, as well as a lot of trial and error in order to use d3.js to its maximum potential, given the time constraints.

Once a visualization was working, we could integrate it very easily to one of the page of our website. The focus was now shifted on its aesthetic as well as on the text accompanying the visualization. We took some inspiration from the Nespresso storytelling webpage for writing impacting scripts about the heritage of coffee, and the art of brewing. For the global design, we had a few constants, like the background color or the titles format, in order to convey an homogeneous aesthetic.

We realized that our website was lacking a proper introduction page, in order to integrate a summary for fast navigation, as well as a title to begin our tale. It added a lot of usability and smoothness to the user experience.

The final touches were destined to make the website more robust, especially due to the scrolls and the proportions of each div. We tested the website against resizing and played with it to come up with something reliable.



CHALLENGES:

While developing our website, we were faced with many challenges at each stage of implementation. Overcoming these challenges required effective collaboration, attention to detail, and a comprehensive understanding of data visualization principles.

DATASETS

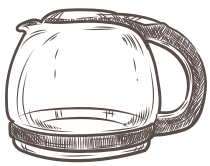
One of the primary challenges in developing a data visualization website about coffee is sourcing appropriate datasets. Coffee-related data can come from various sources such as agriculture, trade, consumption, and cultural aspects. However, locating reliable and comprehensive datasets can be time-consuming and challenging. Furthermore, the acquired datasets may require significant pre-processing due to inconsistencies, missing values, or data incompatibility. Ensuring the data is clean and consistent is essential for generating accurate visualizations. We had to refactor many datasets in order to select a subset of dats we could use in our visualizations.

MEANINGFUL VISUALIZATIONS

Representing every aspect of coffee, from agriculture to craftsmanship to gastronomy, requires thoughtful and meaningful visualizations. Each domain has its own unique data characteristics and visual requirements. For example, agricultural data may involve geographical representations, while the taste profile might benefit from interactive diagrams. Balancing the visual complexity, information density, and user experience is crucial to effectively convey the desired information to the website visitors. We also wanted to focus on the storytelling in order to provide context to the user in its visual experience.

COLLABORATIVE DEVELOPMENT

When working on a website as a team, it is vital to ensure that individual team members' code does not collide with one another. Collaborative coding practices, like using Github in our case, helped us manage conflicts and streamline development. Regular meetings and code reviews were essential to provide coordination and minimize potential clashes when integrating different sections of the website.



HOMOGENEOUS AESTHETIC

Maintaining a consistent and visually pleasing aesthetic throughout the website was a significant challenge. Establishing a recurring schema involved careful selection of color palettes, typography, and graphic styles to create a harmonious visual identity. Ensuring consistent design principles across different visualizations and sections was crucial to provide a cohesive user experience.

WEBSITE STRUCTURE

Developing a website with multiple distinct sections required careful planning and implementation. Each section were to have a clear purpose and deliver specific information. Ensuring a reliable scrolling mechanism, such as smooth scrolling, was important to allow users to navigate effortlessly between sections. Implementing a seamless scrolling experience was quite challenging, requiring attention to detail and responsive design principles to ensure consistent behavior across different devices and browsers.

SKETCHES:

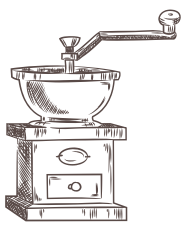
- **Template:**

The first phase of our implementation was the design of our template. We gave careful attention to the visual representation of data and the user experience. The goal was to create a template that effectively communicates information while maintaining an aesthetically beautiful design.
We decided to settle on a brownish color palette to immerse the user in the coffee atmosphere. We implemented the first version of the website with well-defined pages and easy-to-use scrolling. Some parts of our visualizations require a horizontal scroll so we put that in place using the "*carousel*" library framework for fast integration.

⟶ At this stage, we had an empty website with clear page separation, vertical and horizontal scrolling, as well as defined fonts and color palette:

- **Introduction page:**

The first page of our website consists of a presentation of the theme and an overview of the website components through a navigation bar.



- **Storytelling:**

As a first interaction with the user, they have the chance to have a glimpse of the coffee history and patrimony. This phase was part of our extra ideas which we thankfully had the time to implement.

The storytelling consists of three slides that can be scrolled horizontally either manually or automatically after a small time period. The horizontal scrolling mechanism is compartmentalized so it is fully compatible with the vertical scroll. We will give a brief description of each slide of our storytelling.

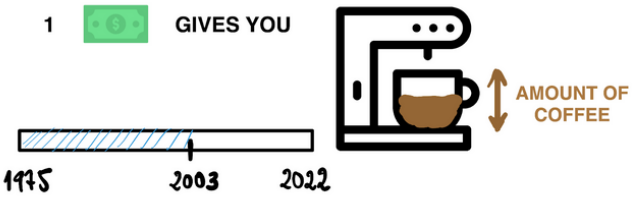
Coffee evolution: Here the user gets the most important milestones in the coffee history. For a more pleasing design, we represented them in a timeline style with a clear succession of events. The timeline implementation is purely CSS based with a from-scratch definition of the boxes and the different components like the bars and circles.

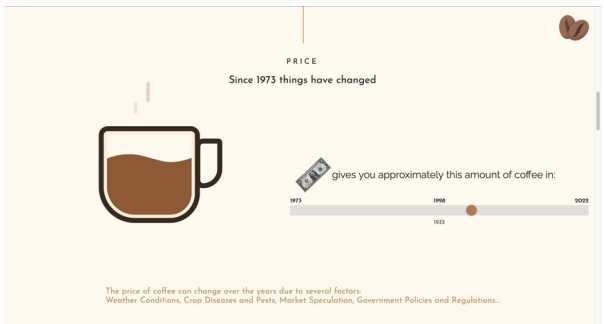
Heritage and craftmanship: This rather simple page was designed to convey a tale about the skills and people involved in the harvest process of coffee. We included a high-quality image for the background, and implemented an interactive overlay displaying a description of the harvesting process in a quite factual manner. The overlay animation was coded from scratch in CSS.

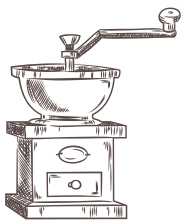
The Art of brewing coffee: We wanted to present coffee brewing as a set of instructions in our story telling, while showing that it was a fine-grained process comparable to art. The page is containing an image on the right-half, and a centered recipe-like text on the left-half.

- **Coffee price:**

From our initial sketches, the idea was to visualize the evolution of the overall coffee price over the years. Our dataset contains the coffee price of one cup of coffee at given dates from 1973 to 2022. The visualization consisted of representing in a fun and original manner by making the amount of coffee for 1 dollar change with respect to the price at a given year.
For simplicity and generalizability, we kept only the price per year from the dataset and used the mean as an overall price. The cup is full if the price is under 1 dollar, otherwise, the level is computed with the rule of three.



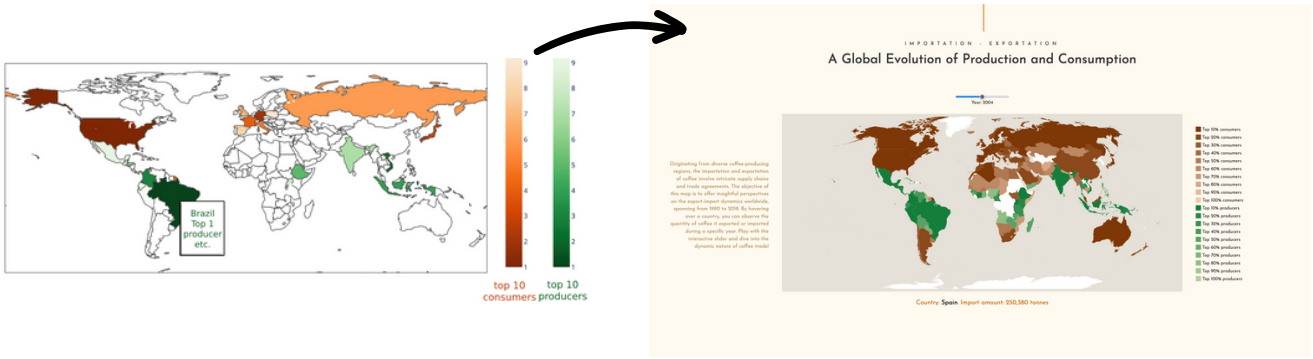




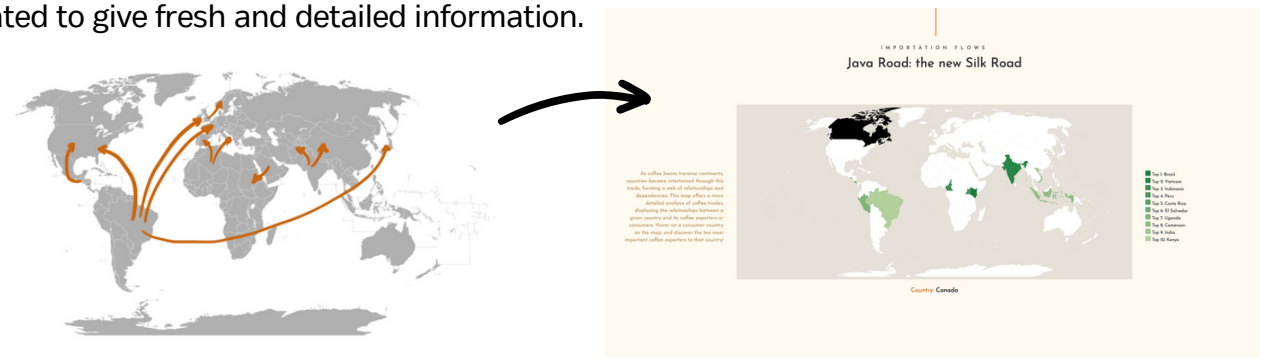
- **Exportation / Importations:**

Initially, we thought about representing the coffee exportation and importation metrics with two maps. The first one represents the top 10 producers and consumers. The second one shows the importation flows of the principal consumers. However, we have finally decided to join both ideas to create two similar map representations, following a coherent and shared implementation and design.

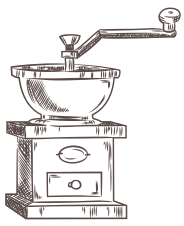
The **first map (importation - exportation)** shows the different coffee consumers and producers. Compared to the original idea, we have created a more complete visualisation: now the metrics are displayed by year, and almost all countries in the world are present on the map. Countries are ranked by deciles (10%), showing their importance via a colour palette based on two of the main coffee tones: "camel" and "treetop".



The **second map (importation flow)** shows the top 10 exporters for each import country. Instead of relying on arrows to represent flows as the original concept, we preferred to stay with a more minimalistic approach, following the same idea as the first map, and providing more concise and clear information. When passing over an importing country, a dynamic colouring shows the ranking of its principal 10 coffee providers. The legend is dynamically updated to give fresh and detailed information.

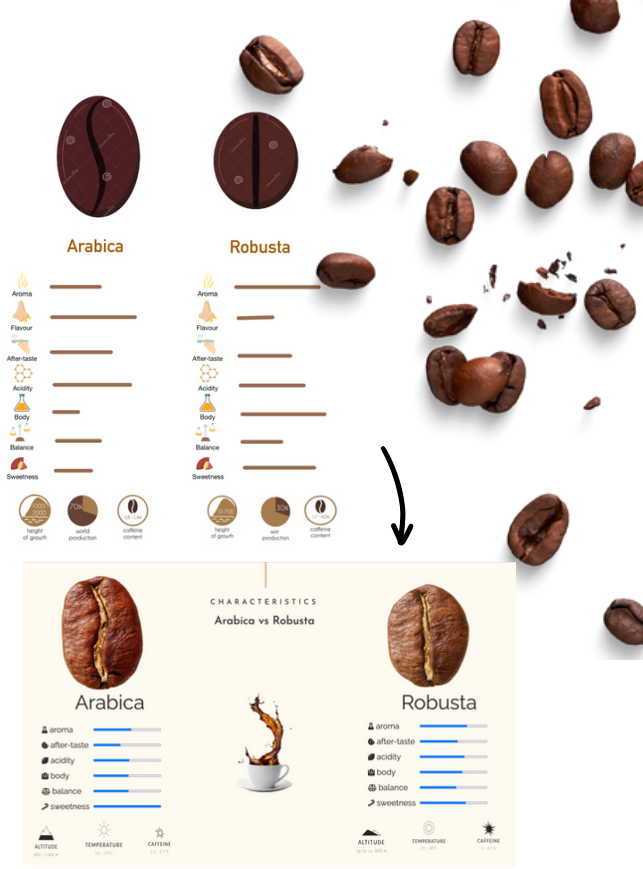


We can group the **technical challenges** to implement these two maps into two groups: data **processing + integration, and dynamic data representation**. On one hand there were some format requirements to use D3 with TopoJSON and GeoJSON, hence we had to carefully process our data and format it to fit these libraries' requisites. On the other hand we attentively designed some scripts to dynamically compute the importation and exportation metrics, get the correct groups and assigned colours, display the evolving legend, etc...



- **Characteristics:**

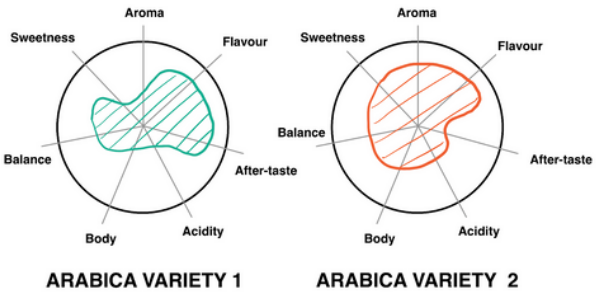
This section is dedicated to comparing the characteristics of Arabica and
Robusta beans. Again, we stayed faithful to the original sketch with an improvement in the general quality of the images.
The dataset contains characteristics of different varieties of each bean, we thus compute the mean for each feature which is displayed as a progress bar.
All the computations are performed in the comparison.js file using the D3 framework.
Here the user gets a detailed overview of the main differences between the two beans and therefore the reasons why one may have a stronger/sweeter taste than the other.
For a more informative visualization, the altitude, temperature, and caffeine levels are displayed at the end.



- **Taste profile**

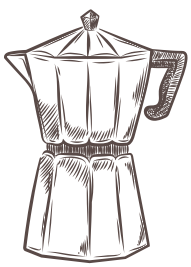
Studying the taste profile of different varieties of coffee was challenging. On one hand, we had a dataset with many metrics describing the taste profile of coffee. On the other hand, we had to think about how to transform this data into a meaningful visualization. We decided to use a radar chart, with the labels being the different taste metrics we had in our dataset (Sweetness, acidity etc...).

We initially thought about having two graphs in order to compare two varieties at the same time. We decided to go onto a different path and display a single graph for a given variety of Arabica, and have a text helping the user to understand the metrics of the taste profile.



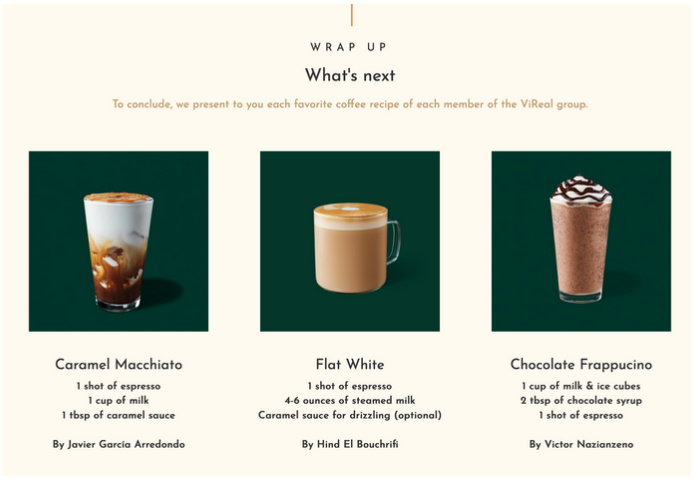
Including Robusta varieties was complicated due to the small amount of data compared to Arabica. We selected the 9 most important varieties of Arabica, and we included an "Other" category averaging the taste profile of the other varieties.

We wanted to keep this page simple, and putting the center of attention into the radar chart in order to avoid distractions for the user.



- **Conclusion:**

Asa fun way to end the website, we decided to present the contributors (ourselves) via our favorite coffee recipes along with the corresponding images. This was not part of the sketches but an extra idea for a better user experience.



PEER ASSESSMENT:

Here is a general overview of how we split the tasks. Overall, we all collaborated equitably and helped each other in case of blockers.

HIND

- Horizontal scroll and introduction set up.
- Coffee price page
- Comparison page
- Conclusion page

- Amazing collaboration and communication. Our skills are complementary which helped a lot enhance the productivity. I had a lot of fun !

JAVIER

- Vertical scroll mechanism
- Maps: data processing
- Maps: visualisation
- Dispositions of the page contents

- Very happy to have worked with Hind and Victor: excellent communication and collaboration, I have learnt a lot from them and from the course!

VICTOR

- Vertical scroll mechanism
- Taste profile section with radar chart
- Coffee harvesting storytelling
- Coffee brewing storytelling

- An amazing team to work with, efficient and fun. A lot learnt about JS and website design.

REFERENCES:

- Cup design inspiration: https://www.youtube.com/watch?v=YCeR4QFVGu8&t=183s
- Introduction page inspiration: https://www.youtube.com/watch?v=btLDTolrY00&t=97s
- Timeline inspiration: https://www.w3schools.com/howto/howto_css_timeline.asp
- Carousel framework: https://getbootstrap.com/docs/4.0/components/carousel/
- Storytelling and introduction pictures: Pexels
- Radar Chart library: Chart.js
- Map inspiration: https://www.youtube.com/watch?v=ha1toFtBfF8&pp=ygUGbWFwIGQz
- Vertical scrolling: https://www.youtube.com/watch?v=pNPkVQD7vlM&pp=ygUUc2Nyb2xsaW5nIGphdmFzY3JpcHQ%3D

Thank you for reading.

You deserve a cup of coffee

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Hind El Bouchrifi
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