

# COM-480: Data Visualization EPFL Spring 2020

## Milestone 2 Report

The goal of our project is to present an historical and statistical view of every football match between nations from 1872, year of the very first official international match, to 2020, just before the COVID-19 pandemic stopped every activity around this sport. **Our website is well advanced structurally with tabs, buttons and sliders, but not yet functional. You can visualize its current state via the following link: [International Football Data Website](#).**

### Sketches of the theoretical final visualization

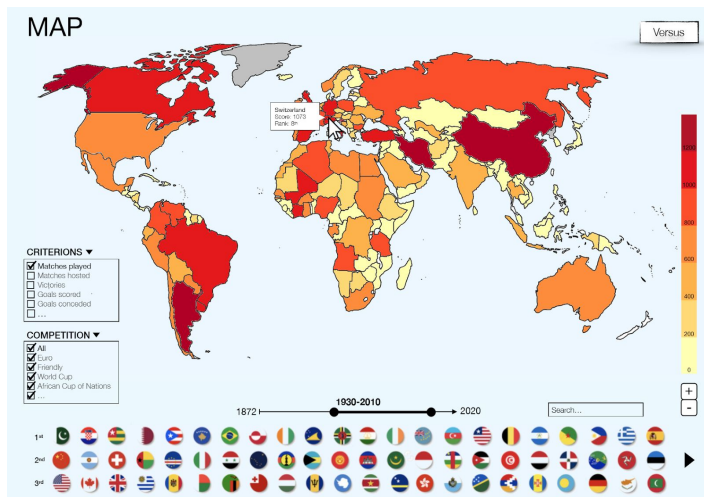
Our website will mainly be composed of three main different tabs : one *History* tab concerning the historical main events that happened throughout the decades, one *Map* tab presenting a map where information would be displayed dynamically according to the criterions and the period the user would select, and one *Details* tab providing detailed statistics related to the user selection.



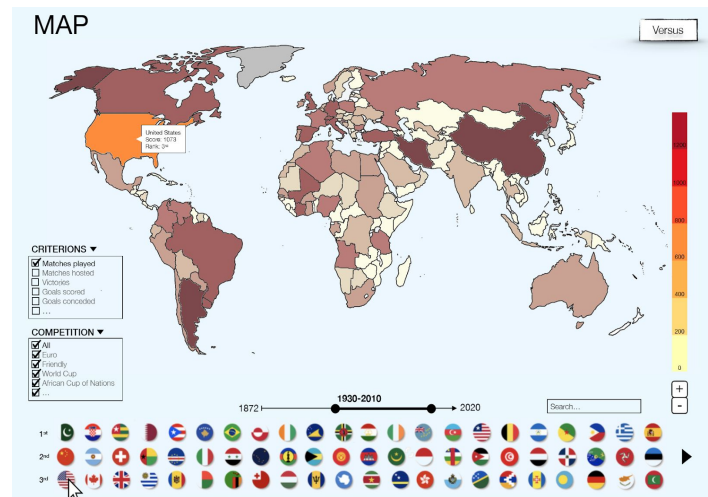
Head of the “*History*” tab which acts as the homepage of the website.

Scrolling down the page would recount chronologically the main historical football events through every decade from 1872 to 2020.

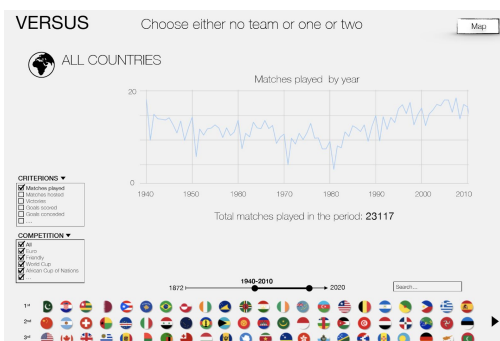
The button “Data Visualization” would directly bring the user to the “Map” tab to access dynamic visualization of retrieved and available statistics.



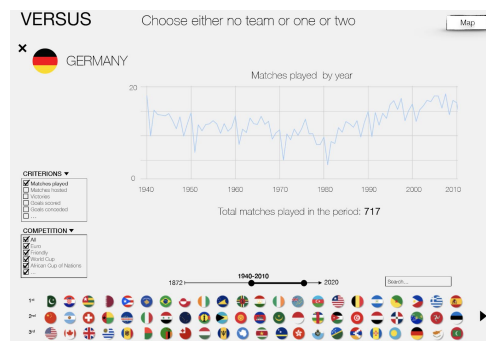
“Map” tab when hovering the mouse cursor over a country.



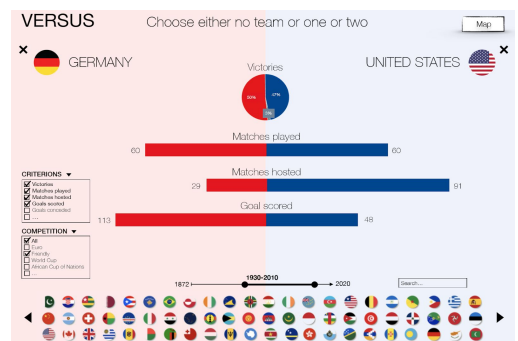
“Map” tab when clicking on a country flag or territory.



“Details” tab when no country is selected.



“Details” tab when selecting one country.



“Details” tab when selecting two countries.

## ***Independent pieces implementation and tools used***

Here follows the list of independent pieces that constitute our minimal viable product:

- *Interactive history presentation*: the chronologic page summarizing the main events composing the historical side of international football, in the *History* tab, will be a dynamical and interactive timeline from top to bottom, with few, very simple, but notable, statistics to immerse the user in a time travel.
- *Time period slider*: a slider composed of two cursors will appear in the *Map* and *Details* tab in order for the user to visualize data according to the selected time period, the latter being delimited by the two movable cursors.
- *Flags slider*: selecting a country to display statistics related to it is sometimes easier than looking for it on a displayed world map, and that's why we decided to implement in addition a high quality flag slider in order to make the website more user-friendly and well-designed. We use an [external country flag pictures dataset from Wikipedia](#), which has been completed in our *Preprocessing* Python notebook, to build this slider.
- *Country search bar*: in addition to flag and map territory selection, the user will also be able to search a country by its name thanks to the provided search bar in the *Map* and *Details* tab.
- *Choropleth map indexed on chosen statistical criterions*: one of the most important visualizations of our website is the choropleth map to display world-wide comparison statistics between countries according to specific criterions from a side menu that are selected by the user.
- *Map zooming*: since some countries are relatively small compared to others, zooming would help the user visualize data concerning these countries more precisely, and would allow the user to click on it to access its detailed statistics.
- *General and single country-related statistical plots*: this part will display statistics, worldwide or specific to a single team, according to the selected criterions, thanks to, for example, interactive graphs, pie plots, and other kinds of statistical schemes.
- *Statistical comparison plot between two national teams*: this visualization will reuse similar techniques from the previous point, but it will use a comparative structure in order to contrast the statistics of two teams, requiring different displays such as bi-directional bar plots to compare the attributes of two teams.

Throughout our project, we will use lectures 2 and 3 for the javascript aspect, lectures 4 and 5 as a guide on the d3.js library and database manipulation and lecture 7 for the general design of the website. Also, specifically for the *Map* tab, we will use lecture 8 to select and implement the ideal map and lecture 6 to inform our color scale usage. Finally, for the *History* tab, we'll use lecture 13 to help with our storytelling.

The different libraries we will use are *D3.js* and *jQuery* for most implementations, *ScrollMagic* to improve the flow of the storytelling in the *History* tab, and *Leaflet* in order to implement the choropleth map.

## ***Extra ideas enhancing visualization***

- *Additional simple interactive timeline*: we can add an horizontal timeline in the *History* tab which would display a very short abstract of the corresponding event of the hovered timeslot.
- *Extended temporal slider*: our temporal slider on the *Map* tab actually lets the user select a period between two years, but we can extend it by adding months selection into the already existing slider, or through a second one to be able to focus on the same months over several years, in order to increase granularity.
- *Reworking interaction effects moderately*: professional visualizations imply advanced transitions and animations on most user interactions with the website. In this optic, some interactions, especially with the *Map* tab, could be further enhanced, as long as they are not made too fancy.
- *Comparing more than two teams*: the *Details* tab lets the user visualize overall statistics, focus on a specific team, and compare two teams following a specific criterion and period, but adding a possibility to compare three, four, or even more countries would strengthen the visualization level and statistical comparison capacity.