2022 Russian invasion of Ukraine

Milestone 2 - Project of Data Visualization (COM-480)

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1 General Idea

We want to present the Russian Invasion of Ukraine as a story. Each *screen* needs to convey certain information according to our prior division: economics, casualties (people), and global (world) reaction. The information always occupies the whole screen space. Transitions from one section to another happen by scrolling. In each section, you can scroll horizontally to see more details. To accomplish that, we will use the javascript `fullpage` library.

Moreover, we choose to organize our data as much as possible around the concept of a centralized timeline. The idea is that the user can select a date on a timeline present on most of the pages. This selected date dictates which information is going to be displayed on the screen for each section.

2 Landing Page

Figure 1: Landing Page

The landing page will hold a global overview of the conflict's situation in Ukraine in the form of a drawing. The drawing of the border of Ukraine will be animated. Then an arrow will appear to move to the first section. A sketch is presented in Figure 1.

3 Casualties

Casualties plots provide the distinction between the civilians and children. To visualize them, we heavily use the `D3.js` library. To provide the focus functionality on a particular day, we need to bind the slider with the plot. An alternative is to reload the data each time which does not make sense. Also, to provide the functionality of the total civilians, adult civilians, and children filtering, we need to bind a button with the plot. We are using class material from lectures 2 to 4. The sketch is presented in Figure 2.

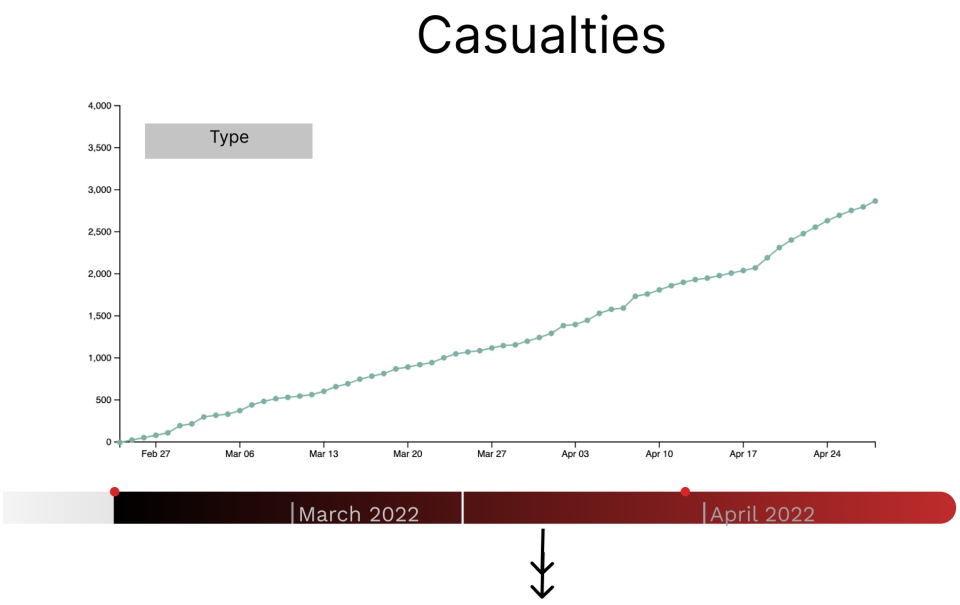

Figure 2: Casulaties Page

4 Visualization and analysis of the economic part of the war

In this part, we will visualize and analyze some economic aspects of the war: evolution of the value of the currencies and the evolution of the price of natural gas and of brent oil. This will span the period from the 1st of January to the end of April 2022. We will add the data for the month of May 2022, when they will be available. Regarding the evolution of the currencies, we will visualize on a choropleth map how much differs the value of a specific date, from a reference value. A timeslider or a button, will allow the visitor to jump from a date to another. To visualize this choropleth map, we use the `anychart` library.
Regarding the evolution of the price of the resources, I simply decided to visualize it as a line chart using `D3.js`. One thing, that could be done, would be to have a disc moving on the line chart according to the date chosen by the visitor. What could also be interesting to do, would be to show the global evolution of each specific currency with a line chart, when the visitor would hover the country related to this currency,
To realize and finish this, we will refer to the course and more specifically mainly to the following lectures: the lecture about maps, the lecture about d3 and interactions on d3 and finally the lectures of the beginning about javascript itself and how to do the stylesheets and so on.

5 Visualization and analysis of the foreign sentiment and reactions

As mentionned in our previous report, we want to visualize the following information about global sentiment and reactions : the global twitter sentiment, the number of sanctions taken against Russia, and the evolution

Figure 3: Sentiment and opinion widgets

Figure 4: Sanctions widget

of the number of refugees. Additionally, we also want to highlight the day's most upvoted tweet in order to capture an sample and gain insight on the feelings of the populations abroad. In order to visualiaze this information, we will rely on D3.js to express the sentiment and opinion using a `stacked normalized horizontal bar chart`, and use a more traditional bar chart in order to express the evolution of the sanctions' count. This is illustrated in 3 and 4. The sanctions' details will appear right under the sanction in an appealing rolling selection *iOS* style using the iOS Style Data Picker plugin. To illustrate the flow of refugees, we are looking into 2 options of varying complexity, both illustrated in figure 5. Depending on the complexity of the task, we would like to express the flow of refugees as an image being filled in with points, by inspiring ourselves from this code using the `Voronoi` module form `D3.js`. If this reveals itself to be too complex, we will simply visualize the information by using the graphics as a loading bar and display the number of refugees below. We will use the class material with lectures 2 for JS and 4 for dataset loading with `D3.js`. The principles from lecture 5 are also used in order to organize visually the information on the page and its events learnings will be applied with our genelarized timeline dictating the day for which to display the information. Finally the forthcoming lecture 11 was also taken into account in order to explore the possibilities in terms of tabular data visualization.

6 Extra idea

We want to provide the first page that presents the current data as really appealing. The casualties would be represented by a human's repeated figure (emoji). We will also want to show the time elapsed since the invasion started and other features like a a cloud of frequent word of online posts.

The other idea would be to show the people the interest in the invents by displaying google trends data on a few crucial keywords and the popularity of tweets - likes and retweets - and call for action.

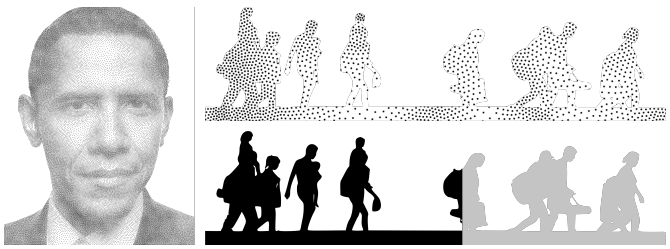

Figure 5: Number of refugees visualization illustration

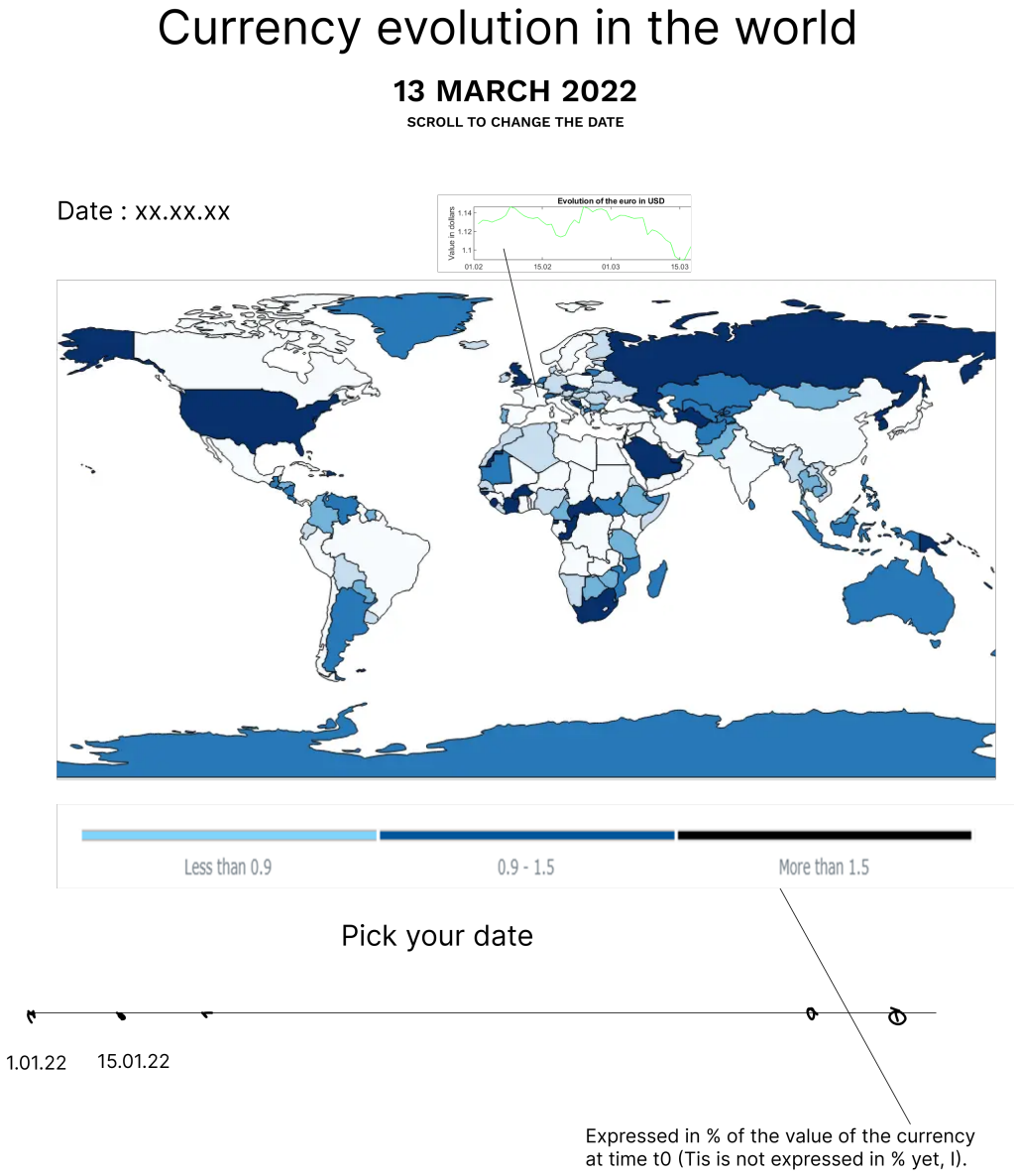

Figure 6: Currencies evolutions per country visualization illustration