Air traffic visualization in Europe

Hector Dorliat, Cherif-Ahmed El Abass and Abdel-Rahmen Korichi

Fig. 1. Air Traffic in Europe.

Index Terms—Data Visualization, Flight, Europe

✦

1 INTRODUCTION

European airspace is one of the busiest and most complex airspaces in the world. Every day thousands of air traffic controllers guide millions of passengers safely to their destinations.

Yet to most people, the choreography going on above them is entirely unnoticed it quite literally goes over their heads. Some might say that it is how it should be. Why do I need to know about air traffic as long as it gets me where I need to go? could be the argument.

But, this ignores one very important point. Airspace might be an invisible infrastructure, but it is every bit as important as the road, rail and utility networks we all rely on everyday. It is the lifeblood of our european economy.

Getting it right matters and we all have a stake in it !

This is why we want to create a data visualization showing the european air traffic for the last few years. The visualization will show, for a selected country, the most frequent destinations from that country and/or the most frequent flights coming in. We will also try to visualize the evolution through time of the most common destinations for a particular country.

2 RELATED WORK

With the developpement of visualization tools today, we can now see the volume of flight traffic all over the globe.

The first example is real time visualization on which we can see the huge volume of air traffic going on Europe.

The second example is a yearly visualization of air traffic all around the world.
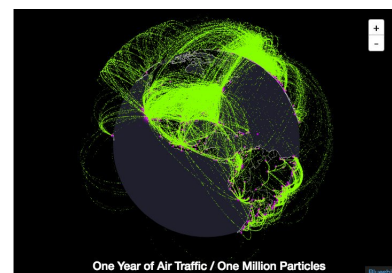

Fig. 2. Real time air traffic

Fig. 3. Yearly air traffic

3 CONCEPTION IDEAS

From several different datasets containing airport by airport European air traffic details over the last two decades, we formed a unique dataset centred on European air traffic passenger flow, by country and by year.

As the more we get back in time, the more data were missing in the original datasets, we will only keep those covering the last five, six or seven years, a point still to debate.

The visualization will take form of an interactive map of Europe covering the most part of the web page as can be seen in Figure 4.. The different countries will be shown separated by their borders.

First, we want to define a colour coding illustrating the density of flight for each country compared to all flights within Europe. The higher the ratio of the number of passengers who travelled from/to the country divided by the total European who travelled, the deeper its colour would be.

To illustrate the passenger flow from one country to another, we chose to use an arrow of which width comes accordingly to the percentage of flights this route reprensents among all of the country's flights. These arrows would show up for a country when passing the mouse over or cliking the country on the map. The clicking should hold the arrows whereas passing the mouse over a country would showthemonly temporarily, but enlighten or swell the country's borders to make it more noticeable.

An option would allow to switch the visualization from "departure" to "arrival". The "departure" mode would show the outgoing flow of the country, while "arrival" could show the incoming flow.

We want to be able to use different cursors :

- a first cursor to select the year we want to visualize

- a second one to select the proportion of the flights we want to represent (for example selecting 50% would show only enough arrows to represent half of the flights from/to the country)

Another idea is to offer a scrolling field, where any of the European country could be selected and then play an animation of the evolution of its flow over the available years.
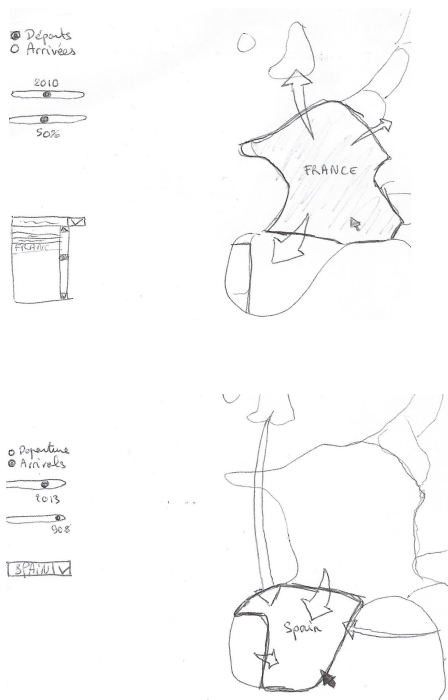

Fig. 4. Conception Scheme

REFERENCES