

Simulación Gráfica



U N I V E R S I D A D
Panamericana

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This document outlines the main Challenges we encountered while the development of the production simulation and dashboard visualization project was made. It covers technical and conceptual difficulties, as well as the solution implemented and those left unresolved.

Challenge : Choosing Appropriate Graph Types

- **Problem:** Each type of metric has its very own characteristics, and choosing the most effective graph for each was not easy. Some initial graph choices made the data harder to interpret.
- **Solution:** We had a testing phase in which we tried out different visualizations. After comparing them we chose the graphs that are being used now.
 - Bar Charts: Comparing station-level values
 - Pie Charts: Proportion metrics
 - Line Graphs: Time based metrics
 - Area Graphs: Continuous data

Challenge : The information was not showing correctly

- **Problem:** After connecting the JSON data to the frontend, some charts were not displaying correctly. We had some blank charts for a while in our dashboard.
- **Solution:** We double checked the JSON structure and we had minor errors that were solved very quickly.

Challenge : Insert the boxes on the right in which they give small pieces of information



- **Problem:** We felt that the graphics were not going to be enough to tell the whole story, we needed something that would help us do that and visually catch the eye.
- **Solution:** On the right hand side of the page, we add a series of boxes with the most important information from the simulation so that it does not go unnoticed by the user.

Challenge : Find the right way to present the information

- **Problem:** It was not immediately obvious how to organize the charts, filters and controls in an intuitive way. Too many graphs would have caused an overload of information for the user.
- **Solution:**
 - The interface was simplified to show only one secondary graph at a time
 - Buttons were added to switch between metrics
 - We added a text so the user knows they have to press a button in order for the graph to appear.

Challenge : Time management

- **Problem:** We all have different schedules and commitments so it was difficult to find the time for the project.
- **Solution:** We created a plan we followed in order to complete the project
 - Phase 1: We started by discussing the key component of the simulation engine and the data structure.
 - Phase 2: The initial version of the simulation was developed



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- Phase 3: We structured the JSON data and implemented it to the frontend layout using HTML and Bootstrap. Several iterations were necessary to fix display issues and improve the user experience.
 - Phase 4: We polished the user interface, verified metric calculations and ensured the visual consistency.