1 Sketches for the final product

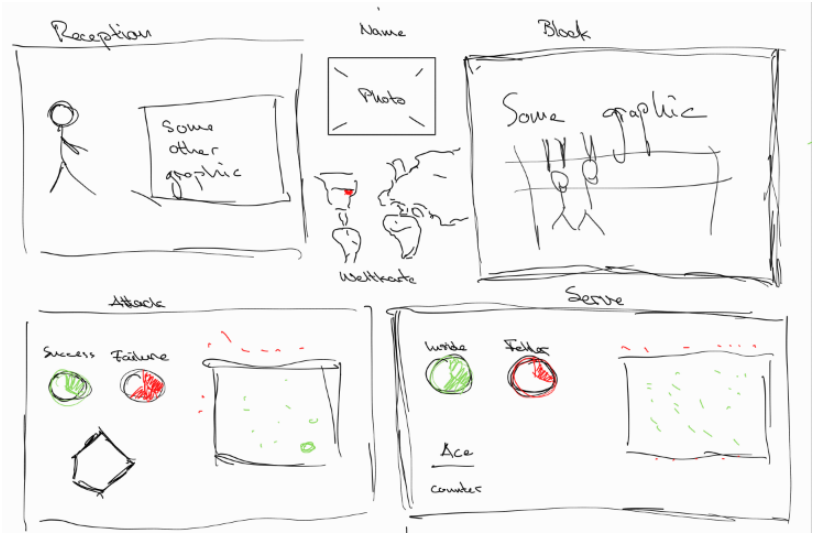

Figure 1: Website visualization

We also plan to make the website accessible and user friendly for cellphone. For the visualization on the phone the different panels are arranged under each other instead of next to another.

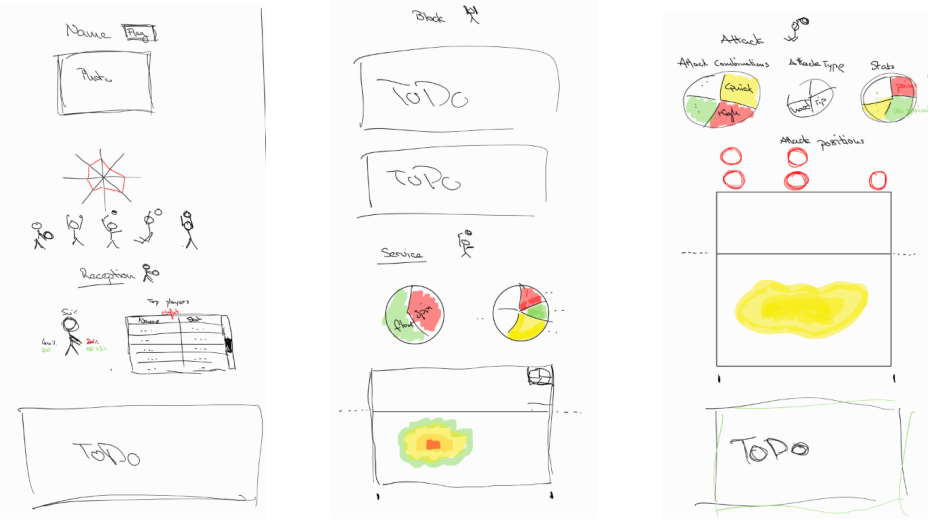

Figure 2: Phone visualization

2 Tools

The initial step involved extracting data from all the dvv files containing information about the games within a given year. For this we had to go through the documentation from DataVolley to get the meaning of all the lines in the files. We extract this data into an initial JSON file that contains all actions of every point from all the matches of the qualification phase of the season.

Then, our objective was to isolate the players' stats for each individual volleyball action (Set, Attack, Reception, Service, Defence, Block), enabling us to conduct statistical analyses and to compare different players.

We will use the following tools for our project:

- D3js: JavaScript library to display dynamics and statics graphs
- ObervableHQ: Wrapper around D3 for more concise plots
- Website: React.js, Typescript, Tailwind, DaisyUI
- Surge.sh: Hosting the website (https://vizionaries.surge.sh)

For the visualization aspect, we'll draw upon the concepts covered in the interactions lectures (lectures 4, 5). Crafting graphs to depict player statistics will require understanding marks and channels. Additionally, website development will leverage JavaScript lectures (lectures 2, 3), and for selecting appropriate colors, we'll refer to the lecture on color perception (lecture 6). We want to focus a lot on visualizations for tabular data (lecture 11) since our dataset has this inherent structure. We'll pay close attention to ensure that the visualizations are not overloaded or incomprehensible due to an excess of information.

3 Goals

Our project aim to visualize statistics about players and game in a season of the NLA, the highest Swiss National League of Volleyball

3.1 Core visualization

We aim to develop six distinct panels, each representing a volleyball action during the game. These actions include Set, Attack, Reception, Service, Defence, and Block. We want to provide a detailed analysis for every of the actions and place them in relation to other players for comparison.

3.1.1 Player overview

Every player's profile will be presented with the following components:

- Player Profile: Each player's name, age and photo, and some general information.
- Spider Chart: A spider chart will visualize the player's performance statistics on the different actions.

3.1.2 Panels

For every of the six volleyball actions there will be a panel showcasing statistics of the player during the matches. Different volleyball positions have different actions. Therefore the number and type of panels showing up can change depending on what player is currently selected.

Inside every panel we want to relate the action of the currently selected player to the whole league. This allows the viewer to compare the current player to others and evaluate better their performance.

The following sections highlight the individual panels with their core functionality.

3.1.3 Service Panel

The Service and Attack actions are the only ones that force the ball over the net to the opponent's side. Therefore there are a lot of tactical aspects on how and where to place the ball to have the highest chance of scoring. We want to visualize this with a heat map indicating the player's preferred serving locations. This chart is interactive and can be filtered to highlight only specific aspects (e.g. type of service or outcome of the serve). Our website already has some initial functionality for this.

3.1.4 Reception Panel

This panel will center around the player's reception skills. The core visualization contains a graphic representation of how good the player receives depending on where (relative to his body) the service came.

3.1.5 Block Panel

The block panel will highlight the player's blocking abilities. It highlights how many balls the player touched in block and how good the quality of those touches were.

3.1.6 Attack Panel

Similar to the Service Panel, the Attack Panel's main functionality is the heap map of the preferred attack targets. However there are many more filters in this panel since Attack is one of the main focuses when scouting an opponent before a game.

3.1.7 Set Panel

The Set Panel focuses primarily on the setter position in Volleyball. He is the one that decides which player attacks the ball and tries to prepare the ball the best possible for the team. This role is the most tactically challenging but also the hardest to scout and rate. We visualize the decisions of the setter and how the team attacked after the set.

3.1.8 Extra Ideas

- Display the outcome of the some actions (service, reception, attack, block) as a diverging stacked bar chart (seen in lecture 11) comparing to other players on the same position.
- Having elaborately aggregated statistics for specific actions that are more valuable for scouting (like attack after first reception)

3.1.9 Website

The website is currently uploaded at https://vizionaries.surge.sh. Currently it can be slow / unresponsive on the initial load since it is loading the whole dataset.

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