WHO'S THAT POKÉMON?

Team Members: Jennifer Nelson (u1060401) & Matthew Christensen (u0899251)
Email: jennymarienelson@gmail.com u0899251@utah.edu
Project Repository: https://github.com/jenniNelson/dataviscourse-pr-christennelsenson

Background

With a new generation of Pokémon just around the corner, trainers around the world are getting ready to start their adventures again. From the outside, Pokémon seems like a basic rpg game series. However, it should be noted that lifelong fans often take these games **very** seriously. Depending on who is approaching the game, they may want to fly by the seat of their pants or plan every decision out in advance meticulously.

While there is no shortage of tools available online to help prospective trainers learn about the various Pokémon they might encounter on their journeys, it isn't always obvious how that Pokémon compares to others. Furthermore, locations for each creature are usually presented as a set of numbered locations. For someone who isn't as familiar with every game, it can be difficult to visualize where each Pokémon is on the map. On top of all of that, most databases don't make it obvious if an individual Pokémon can even be obtained in a certain game.

All of these factors and more can make it difficult to plan out a team of 6 Pokémon to take on a journey through a game. Our goal is to create a tool that will bring together information from several large community databases for the purpose of helping new or veteran trainers learn about and locate Pokémon to bring to their team.

Project Objectives

The primary objective of our tool is to help users learn practical information about Pokémon. Specifically, we want to create a tool that will make locating Pokémon in each game as quick and intuitive as possible. In addition, we want our tool to assist users in the team building process (e.g. providing basic stat and type advantage information for a team of 6 Pokémon that the user suggests). As well as locating specific Pokémon, our tool should also provide information on which ones are available in any given location on each of the games' maps.

Some example questions that the user should be able to answer:

- Dusklops is my favorite! Is it possible to get one in Generation VII?
- I have 6 Pokémon already for my team. Are there any types that I should watch out for when battling?
- What Pokémon are available near the start of the game in Generation IV?
- How would Seadra fare against Scizor?

- How would *the worst* Pokémon do against *the best* Pokémon?
- I'm really struggling with the electric type gym in Lumiose City. Are there any ground types nearby I can use for help?
- What Pokémon are similar in stats to Garchomp?

Data

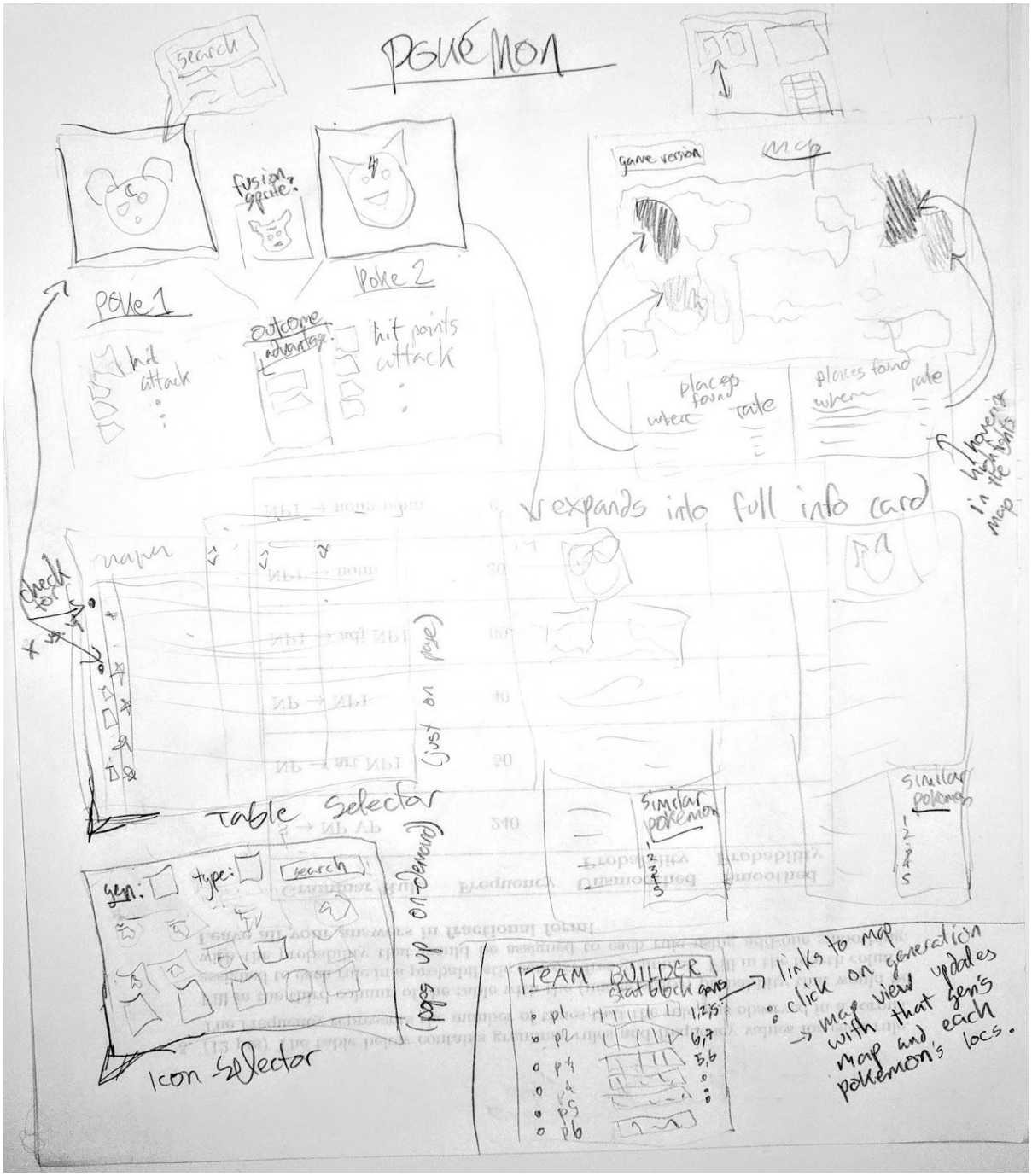
Pokémon is an incredibly popular video game franchise, and numerous data sources are publicly available. We plan to primarily use "The Complete Pokemon Dataset" found on Kaggle, providing the basic stats for each pokemon. We will augment this with less-neat data from The Pokemon Database and Bulbapedia (locations found, evolution trees, special abilities). We will use pokemon sprite/icon assets from Bulbapedia, and map images from various sources. We will manually create some data, mainly map overlays.

Data Processing

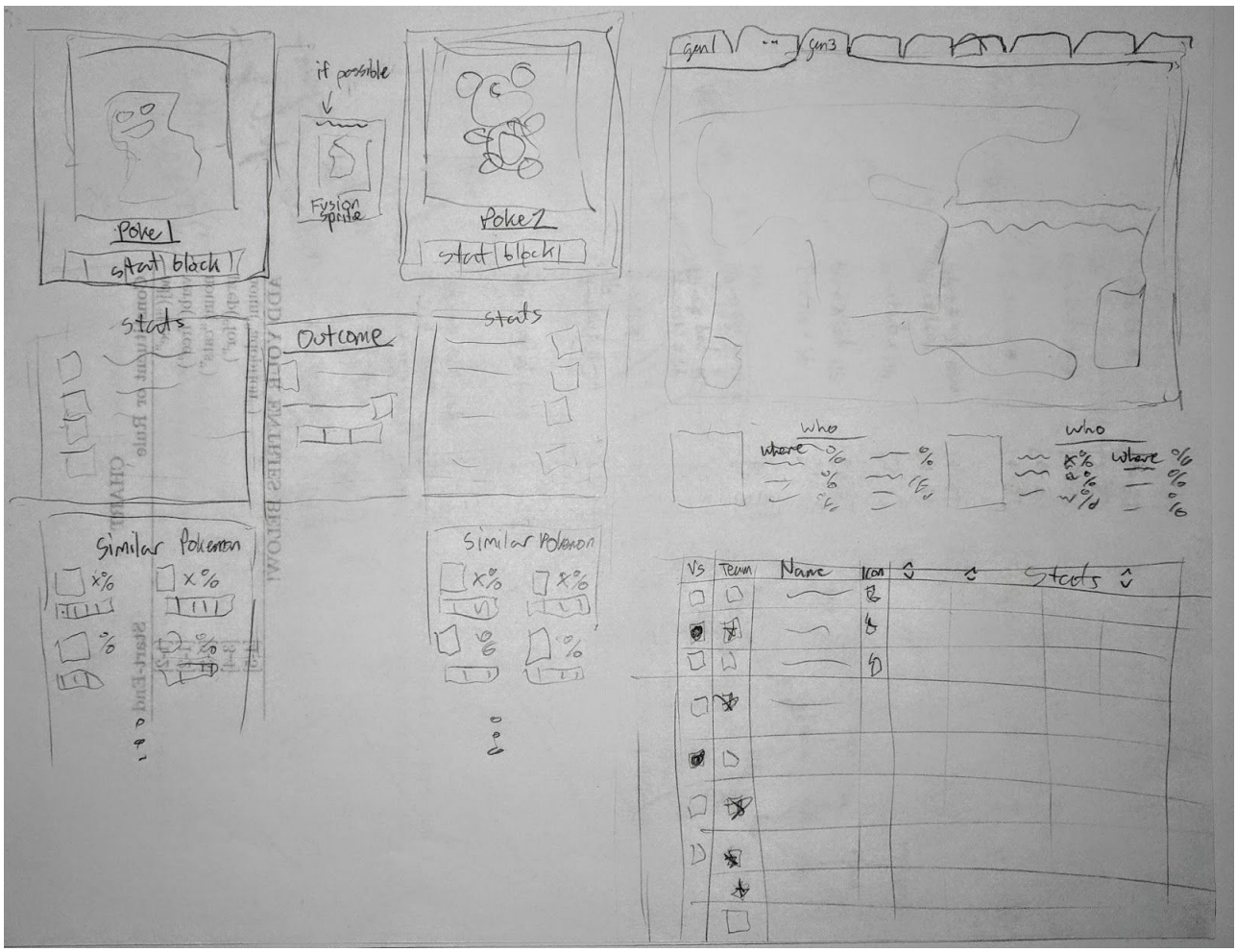
We will combine the neat Kaggle dataset with less-neat web-scraped sources. Fortunately, a unique identifier called the "National Pokédex Index" is integrated into the game, and almost all web-scraped sources incorporate both pokémon name and pokédex index into their dataset. We will do web-scraping of our own, mainly for sprites and icons for each pokémon, per generation. Bulbapedia has a standardized naming schema for its sprites and icons, using the pokédex index, so we anticipate this being a learning experience, but possible.

Our main challenges will be getting sprites/icons, getting evolution trees, and getting workable maps. The sprites/icons are most necessary to our visualization. The maps are key to our vision, but do not need to be comprehensive or complete. Evolution trees are an obvious nicety for this visualization, but are not necessary. It may be possible to more-easily get simplified evolution trees that state an evolved pokémon's base evolution.

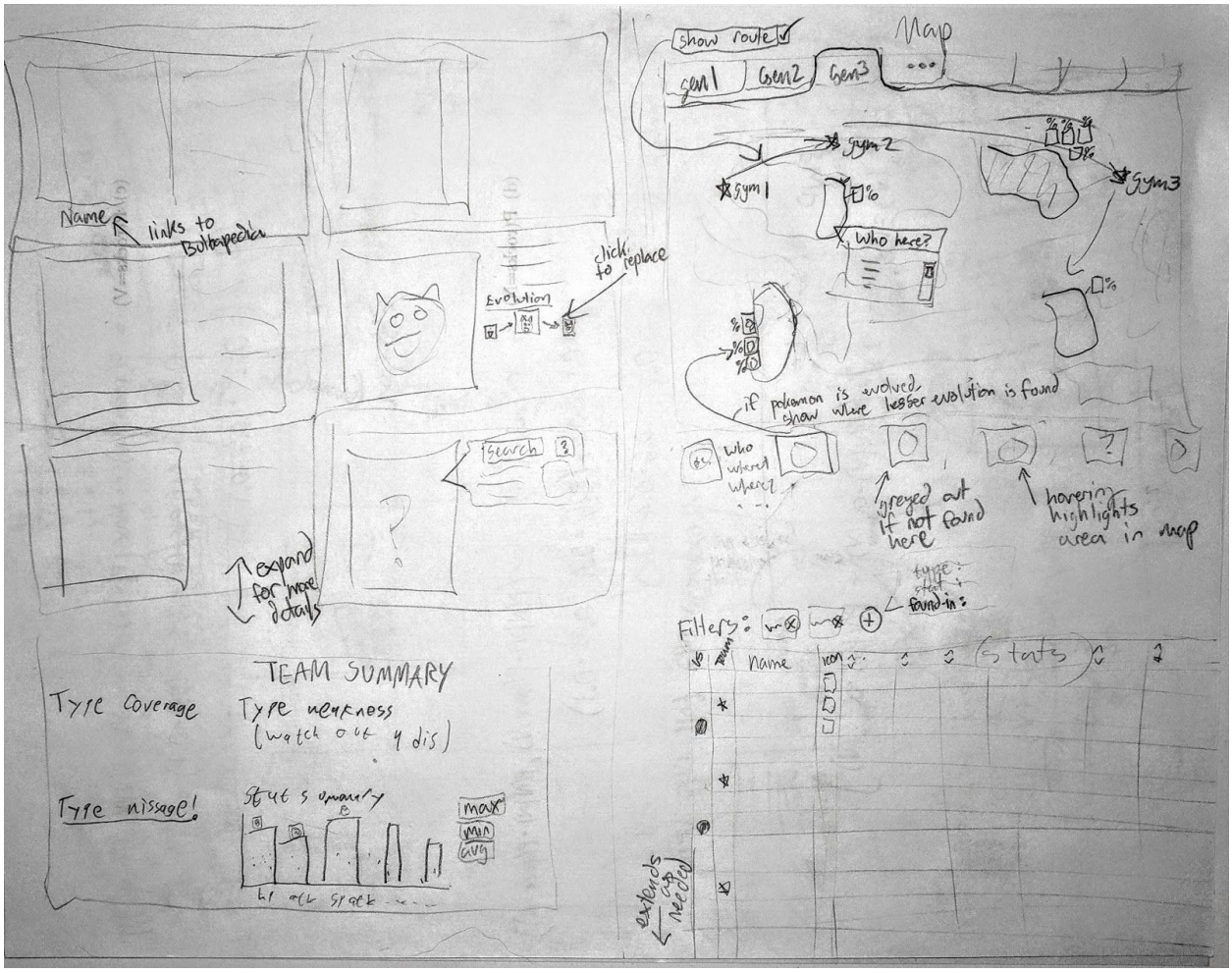
Visualization Design



After deciding we wanted to do Pokémon, we brainstormed three different visualizations we wanted. First we thought of a ‘Vs’ view, comparing two Pokémont to each other, battle-style. Then we thought of a map view, showing what Pokémon could be found where, per game. Then we came up with a rough idea of a “team building” mode. Though first just a small card, we later expanded on this view.



Second Iteration of the ‘Vs’ tab. The cards for the two selected Pokémon are still in the top left, but we’ve decided to provide additional information for each of the Pokémon below their cards, including the matchup information and nearest stat ‘neighbors’. We’ve also moved the full interactive list to the bottom right beneath the Map panel. The tabs at the top of the Map panel will switch between the regions for each of the 7 (or 8) generations.



A draft of our Team Builder view. In the top left, there are 6 cards for each team member that the user can fill in. When the user clicks on a card, a dialog will pop up allowing them to search for their Pokémon by name. Alternatively, they can search through the interactive list that also appears in this view on the bottom right. By clicking a checkbox next to each Pokémon's row, that Pokémon will be added to the team builder. In the bottom-left, there is a Team Summary that will be updated every time a Pokémon is added to the Team Builder cards. The Summary will contain basic information that the user will need to evaluate their team. In the top right Map panel, the locations of all 6 Pokémon will be marked on the map with their corresponding icon.

Core Visualizations

- 'Vs' View
    - Two side-by-side cards show two Pokémon sprites/names/Pokédex index.
    - Expanded stats blocks below each, with an "Outcome" block between.
    - "Outcome" block estimates the probable results of a battle between the two Pokémon.

        - “Top Five Similar Pokémon” cards below each stats block. Similarity is defined by the d2 distance of two Pokémons’ stat vectors.
- Team Builder View
    - Six cards in a grid, each describing a Pokémon and its basic stats.
    - A “Team Analysis” block below the cards
        - Type Coverage (i.e. the set of types this team is effective against)
        - Type Weakness (i.e. the types which 2 or more Pokémon on the team are weak to)
        - Type Mis-Coverage (i.e. types for which no Pokémon on the team is effective against)
        - Stat Summary (bar chart summarizing the best Pokémon for each individual stat)
- Map View
    - Maps from each generation’s game, selectable via tabs
    - Maps are “the best we can find”, hand annotated with regions
    - Two (‘Vs’ view) or six (Team Builder view) Pokémon sprites below the map, each with a list of the locations they appear in, and spawn rate per location.
        - Hovering over a sprite highlights those areas on the map
- Pokédex table
    - All Pokémon, sortable by name or stat
    - Column to select which two Pokémon are included in ‘Vs’ view
    - Column to select which six Pokémon are included in Team Builder view

Optional Features

- Animated sprites/icons (for generations with animated sprites/icons)
- Gen 8 (Comes out Nov. 15th)
- “Right-click-to-search” feature for selecting a Pokémon for any card
- Bonus ‘Vs. Mode’ Features
    - “Fusion” sprite view, with images from a generator.
    - Show evolution tree. Other evolutions of that Pokémon are clickable to switch Poke1 (or Poke2) to that Pokémon.
- Bonus Team Builder Features
    - Cards can expand to include advanced stats and the five “most similar” Pokémon
    - Clickable evolution tree (as in Vs. mode)
- Bonus Map Features
    - Map annotations for typical path, gyms, etc.
    - Annotate which Pokémon are obtained in special ways
    - Click a region to show what Pokémon can be obtained in that region
    - Small icons for the two or six selected Pokémon appear near/in/on all regions that Pokémon appears in.
- The Pokémon Spiderweb (Pokéweb)

- A Network view of all Pokémon, linking each Pokémon to its top 5 (or other number) “most similar” other Pokémon. Similarity is defined by the d2 distance of two Pokémons’ stat vectors.

Schedule

Due Date	**Component**	**Team Member**
Oct-25-2019	Project Proposal	Jenni/Matt
Nov-1-2019	Get Stat Data	Matt
	Get Map/Sprite assets	Jenni
Nov-8-2019	Functional Prototype	Jenni/Matt
	Get Location Data	Matt
	Generate Stat neighbor Data	Jenni
Nov-15-2019	Map Functional	Jenni/Matt
Nov-22-2019	Feature Complete	Jenni/Matt
Nov-27-2019	Final Project Due	Jenni/Matt