Team TPK Documentation Slidedeck

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Goals

- We created a combat simulator for tabletop roleplaying games such as Dungeons and Dragons, which provides game masters with reliable information on the difficulty of an encounter.
- Our primary goal is to create a reliable, user-friendly, informational website which helps game masters design engaging combat encounters.

Intellectual Merits

- We worked with a variety of different computer science principles in the design and implementation of this project. These include but are not limited to database design, artificial intelligence, data analytics, UI design, and web design.
- In the development of this project, we worked in two-week sprints, similar to those you see in professional software development.

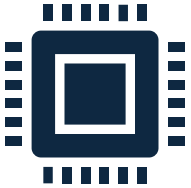
Broader Impacts

Dungeons and Dragons Community

Game Masters and players both can use this product to see how powerful they are in their home games

TTRPG Creators

Designers can use this tool as a way to see how combats are run on a very numerically based axis



Real-life applications

Some early TTRPGs were created to test real-world combat scenarios, and our product could function similarly

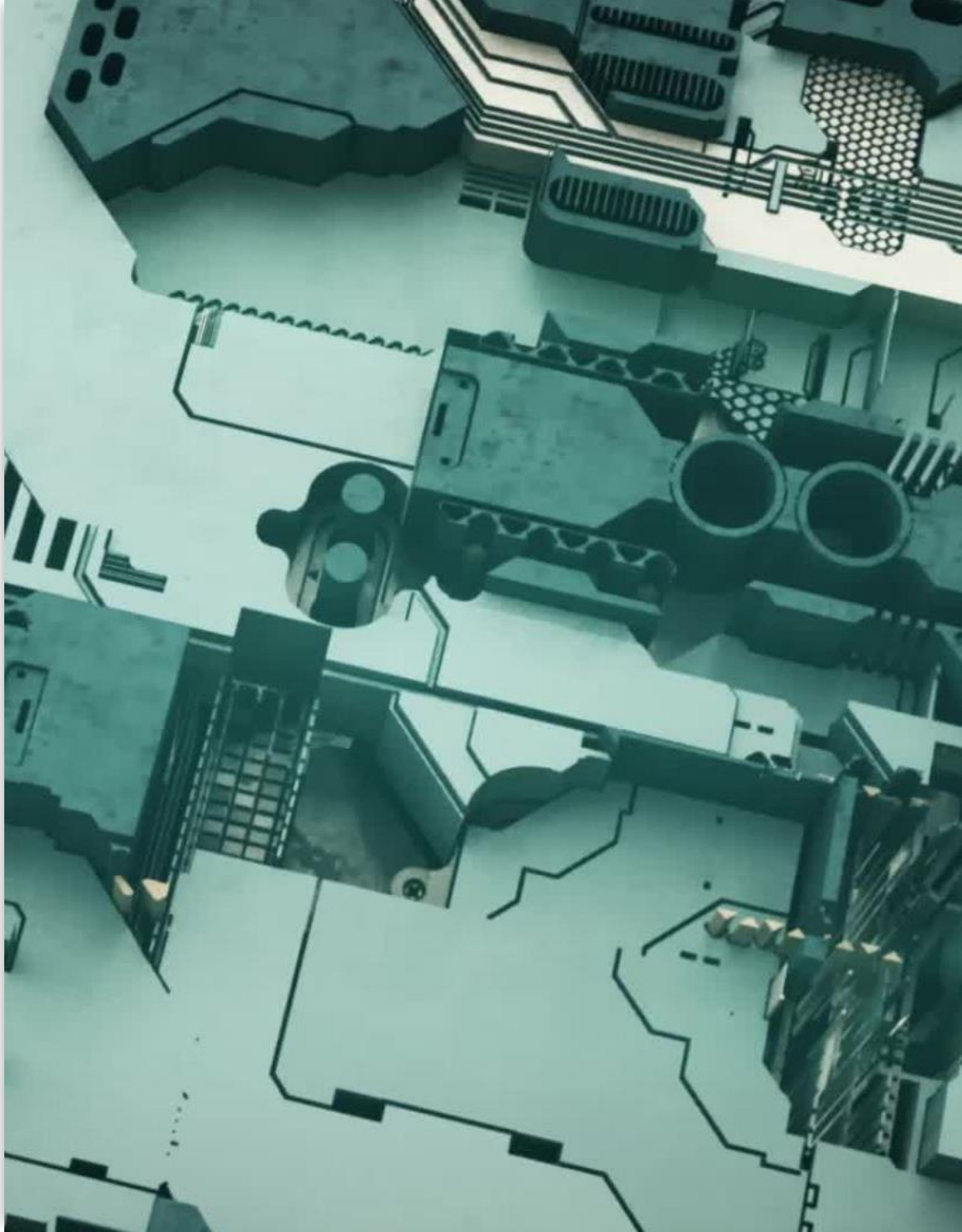
Design Specifications

Our system is set up with three main layers

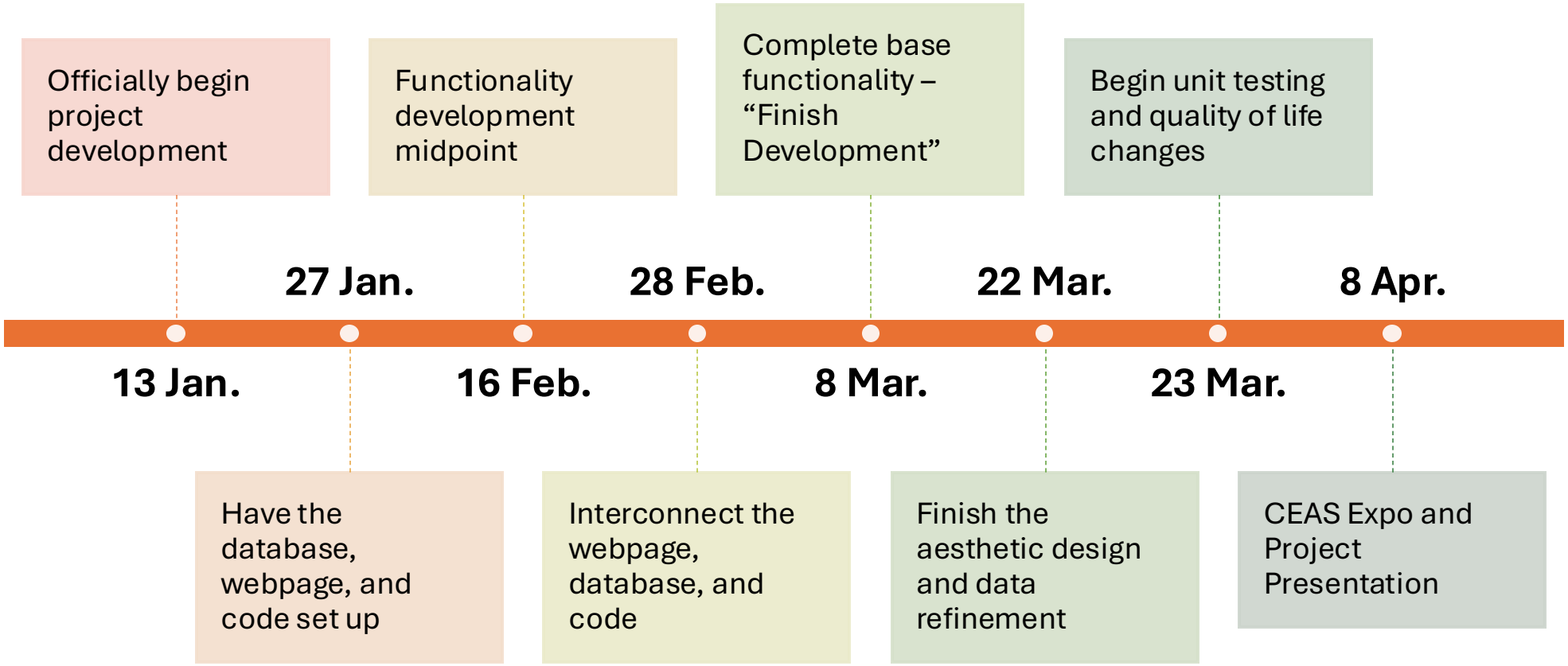
- Webpage
  - This is where all of the user interfacing occurs
  - Able to access past uses and saved info if they have an account
- Database
  - This is where all of our information is stored for quick access
  - This is mostly important for connectivity with the Webpage
- Code
  - Takes the inputs from the webpage
  - Runs each combat through a Monte Carlo Simulation
  - Reports back to the database to store previous runs

Technologies

- Monte Carlo simulation
  - This is not a new technology, but rather a tool that is useful within the confines of Dungeons and Dragons
  - With this simulation we are able to portray more accurate results for combat encounters as a multitude of possibilities are calculated
- Players and Monsters as Templates
  - This way of thinking allowed us to streamline the process of creating and using both player and monsters
  - This also means that customizations are very easy to make as they are as simple as numbers in our templates



Milestones


Officially begin project development
Functionality development midpoint
Complete base functionality – “Finish Development”
Begin unit testing and quality of life changes
13 Jan.
27 Jan.
16 Feb.
28 Feb.
8 Mar.
22 Mar.
23 Mar.
8 Apr.
Have the database, webpage, and code set up
Interconnect the webpage, database, and code
Finish the aesthetic design and data refinement
CEAS Expo and Project Presentation

Results

We’re approaching base functionality for both the website and code aspects of the project.

The python code is complete with our Monte Carlo simulation.

The database is set up and connected to the website, where it can both receive and input data.

Finishing Tasks

- Complete base functionality, which should be done in the upcoming weeks.
- Include all testing elements in the driving Python code.
- Complete the database structure to encapsulate the entire scope of the project.
- Debug and improve the aesthetic design of the webpage.
- Unit test and quality of life improvements.

Challenges

- Connectivity of the three main divisions of our work
  - Making the code, website, and database all work together to get our final project was our biggest challenge
- Hosting our project
  - Since our project requires a large amount of computational power, we are not able to simply run our simulation on a website
  - Finding the best way to host this simulation so that it can be accessible was quite a challenge