



DM Tools: An Interactive Dungeons and Dragons Framework for Dungeon Masters

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ABSTRACT

[Dungeons and Dragons \(D&D\)](#) has maintained a vibrant community of enthusiasts for over 45 years, but many aspects of the gameplay are hindered by dependence on traditional pen and paper usage. The goal of our DM Tools product is to enhance the experience of in-person D&D games by providing a centralized means for the [Dungeon Master \(DM\)](#) to generate, organize, and manage the complex interactions of details needed for gameplay.

The DM's role of directing and monitoring gameplay is an astronomical burden that's a critical impediment to successful gameplay. In conventional gameplay, DMs must generate and navigate through dozens to hundreds of pages of custom generated content while also narrating the story. Our product addresses a critical need for easing this burden by providing a centralized means of organizing and generating details for gameplay. Our tool's focus on improving DMs' performances complements other electronic applications focused on enhancing the players' experiences, such as [Roll20](#), and providing DMs a database, like [D&D Beyond](#) does. To ensure the accuracy and quality of our product, we introduced cross-platform prototypes developed using Agile methodologies and Electron to stakeholders (local D&D players) every other week for acceptance testing and user story creation.

DMs using DM Tools can easily generate and track details of their [campaign encounters](#), view a creature's information and conditions, and manage turn order in a single location. DM Tools is helping the D&D community leverage modern electronic information management strategies to enhance enjoyment of the game.

MOTIVATION AND BUSINESS IMPACT



Things the narrator keeps track of:

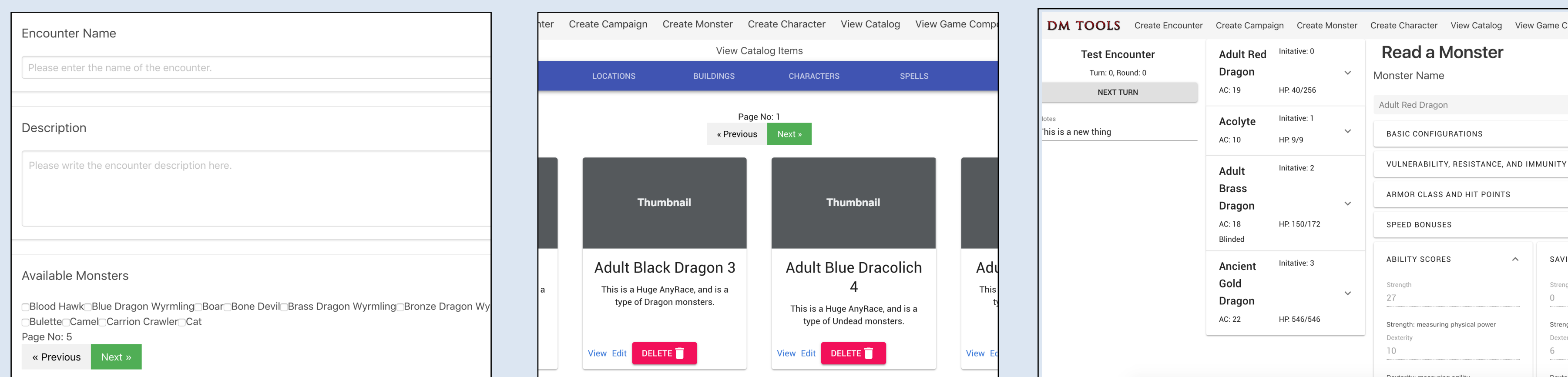
- Where are the characters?
- How healthy are the characters?
- What *can/would* each of the characters do?
- How can each of the characters do this?
- What does the character have with them and why?



Our Goal: Providing a centralized means of organizing and generating details for playing through encounters inside a campaign

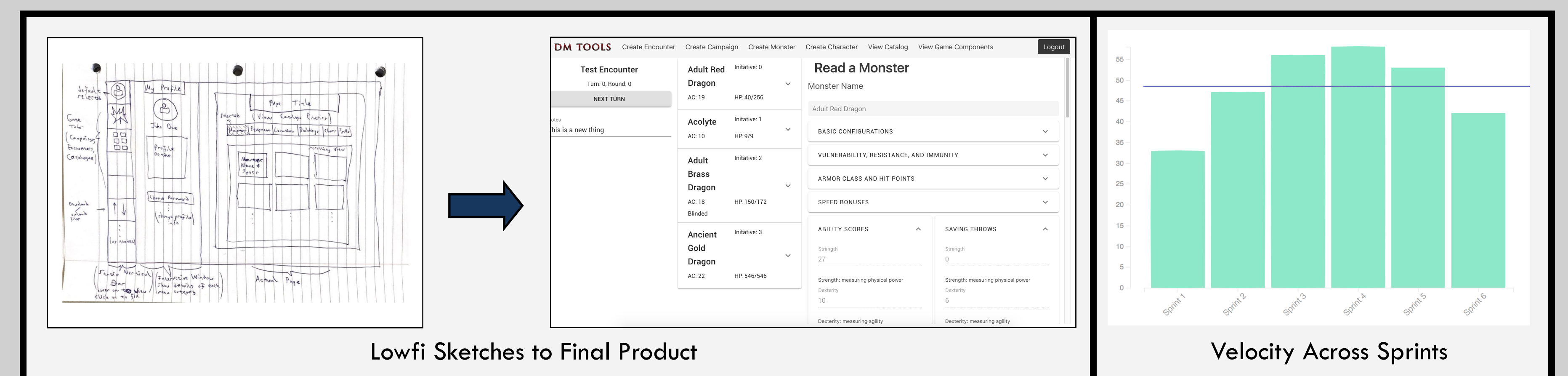
VISION AND PRODUCT OVERVIEW

DM TOOLS



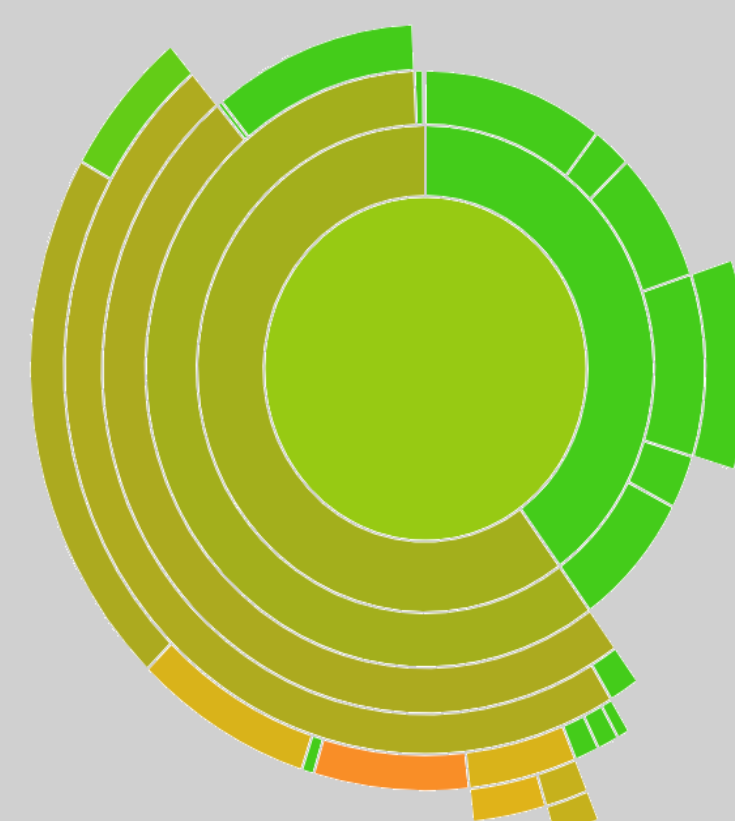
SOFTWARE DESIGN AND APPLICATION

- Agile methodologies are utilized to assure software integrity and maximize customer satisfaction.
- 6 Sprints of 2 weeks in length, average velocity of 49 points
- Requirements, user stories, and MVPs created and managed by stakeholders with the product owner.

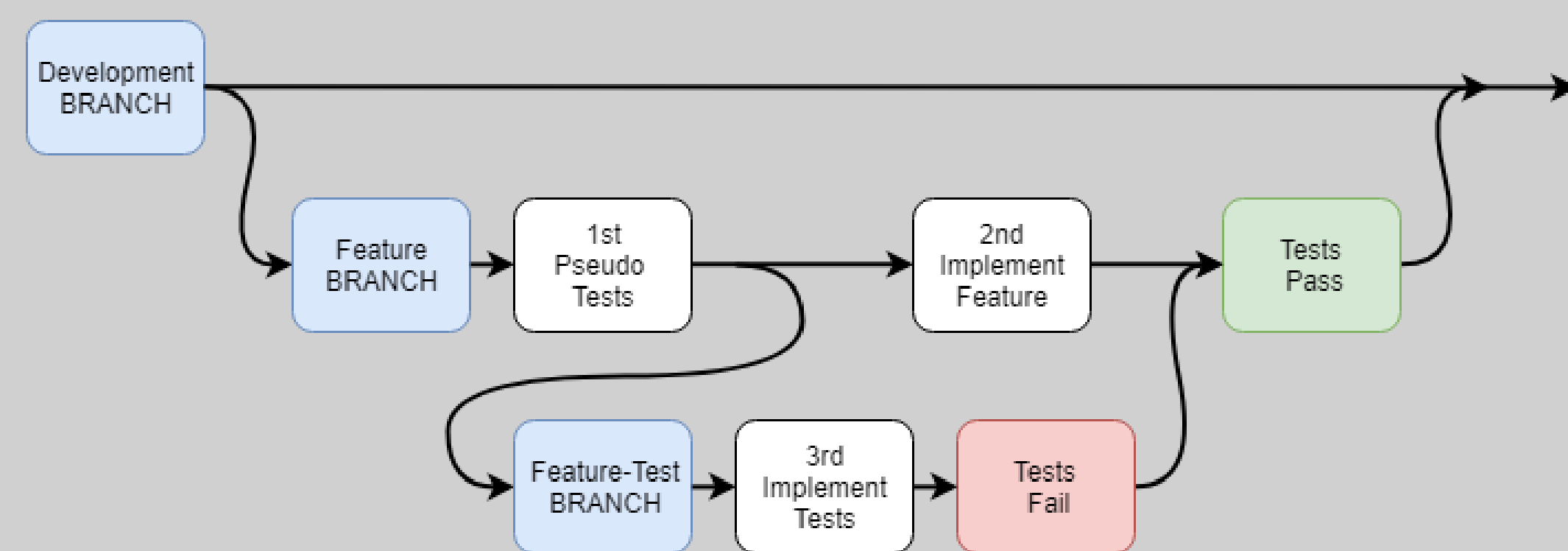


QUALITY ASSURANCE AND TESTING

- 80% code coverage at all times
- 100% of written tests must pass at all times
- 100% of features must pass acceptance testing by the product owner
- Biweekly acceptance testing by stakeholders (Community D&D players)
- Snapshot Testing
- Happy/Sad Path Testing
- Mocked HTTP calls and other components for component testing



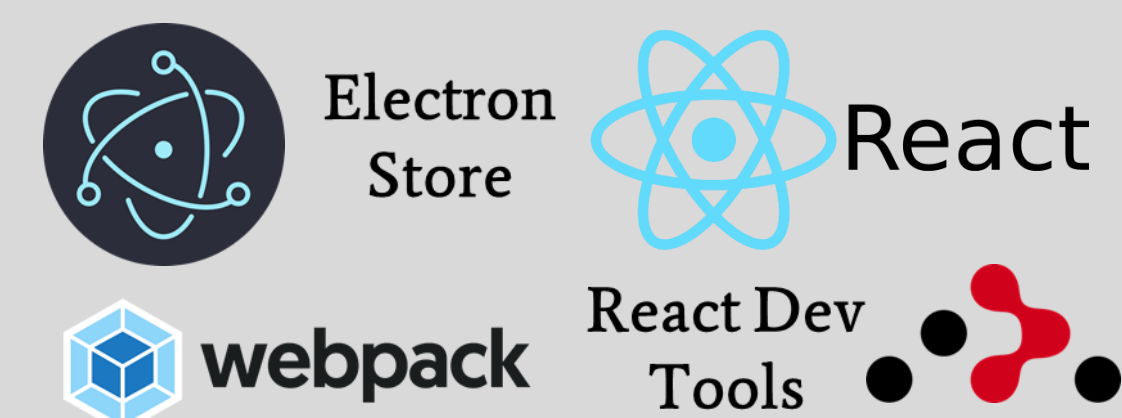
Coverage Sundial



Our Red-Green Refactor Strategy

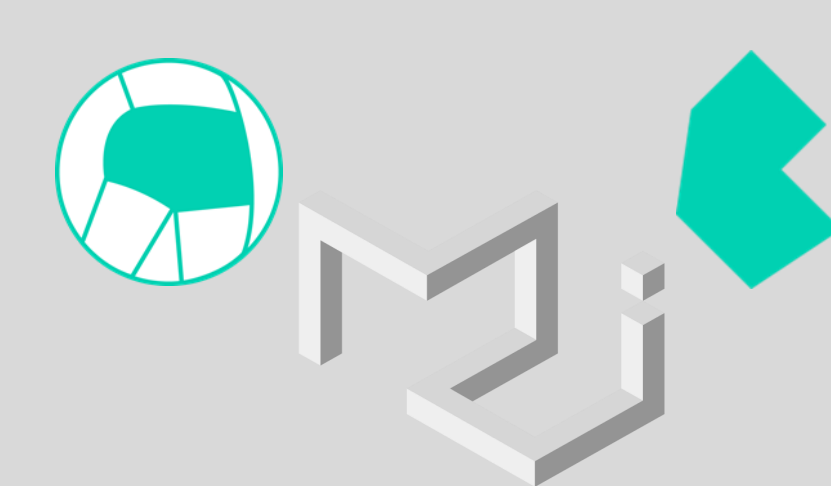
TECHNOLOGIES USED

Frontend Development



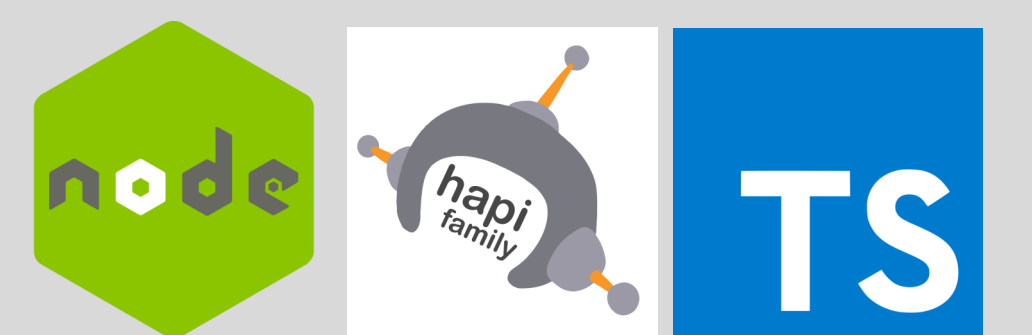
Electron Webpack, Electron Store, React, React Dev Tools, and React Router

CSS / User Interface



Bulma, Bloomer, and Material UI

Backend Development



Node JS, TypeScript, Hapi JS, Joi JS, and Boom JS

Full Stack Testing Suite



TS-Enzyme, TS-Jest, and Nock

Database and Server



Amazon Web Services, JSON Web Token (JWT), Docker, PostgreSQL and TypeORM

Continuous Integration



Travis CI and CodeCov