Vellum:
Requirements Engineering

Prepared By: Mohammed Amir

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1. Goals

The objectives of this web application are to enhance productivity for both Dungeons & Dragons (D&D) players and Dungeon Masters (DMs) by simplifying the management of game materials. This will be accomplished by providing intuitive tools for players to create and manage character sheets, track stats, bonuses, and skills, and streamline the process of leveling up characters. It also aims to provide a free-to-use platform for new D&D players to learn and enjoy the game without having to commit hundreds of dollars to learning the game. For DMs, the system will offer functionality to create, organize, and maintain homebrew content. The primary benefit of the application is to improve efficiency by ensuring accurate and reliable tracking of character data, progression, and custom game elements, ultimately reducing time spent on manual updates and enabling a more seamless gameplay experience.

The above can be broken down into the following goals:

- Intuitive tools to help players create and manage character sheets, track stats, and view bonuses.
- A simple and concise way to level up characters and import new data based on the leveling path
- Functionality to allow DMs to create, organize, and maintain homebrew content for their games
- A way for DMs and players to collaborate across campaigns
- A commitment to keeping the platform accessible at no charge

2. User Personas

2.1 Persona 1 - Gabe [Player]

- **Role:**
  - Gabe is a Computer Engineer and avid D&D player

- **Biography:**
  - Gabe has been playing D&D for a long time. He loves coming up with character ideas and uses sheets and notes to jot down his ideas for future use. He's always toying around with different ideas in the

strangest of places: the subway, the grocery store, even the bathtub. Gabe is all about toying around with different concepts, mixing and matching stats, classes, races, and features whenever he can to create interesting new concepts. He likes to be able to customize every aspect of his characters.

- **Needs:**
  - Gabe needs to be able to quickly change the attached stats, classes, and features of his characters and view the effects of the changes in real-time
  - Gabe needs a mobile version of the site so that he can get his character ideas down while he's on the go
  - Gabe needs to be able to create partial characters without having to complete all aspects of the character sheet so he can flesh his ideas out later
  - Gabe wants to know what possibilities when it comes to character combinations are possible and which ones won't work or will overlap

- **Pain Points:**
  - Gabe needs something quick and easy. Coming up with new characters and swapping things out should be fast and dynamic so he can try multiple things without the added stress

2.2 Persona 2 - Sasha [DM]

- **Role:**
  - Sasha is a busy Dungeon Master (DM) juggling multiple ongoing campaigns and numerous characters while balancing work and personal life.

- **Biography:**
  - Sasha has been DMing for several years and loves crafting intricate storylines, managing a variety of characters, and engaging players with creative challenges. As a passionate storyteller, Sasha is always brainstorming new NPCs (non-player characters) and unique scenarios, often making quick notes during breaks at work or late at night. With so many characters and plot elements to manage, Sasha relies heavily on tools to streamline their creative process and ensure everything stays

organized. They don't have time to sit in-person and guide their players through the character creation or level-up process, and prefer tools that automate or simplify this aspect of campaign management.

- **Needs:**
  - Sasha needs a character creation tool that players can use independently, allowing them to craft or level up characters without direct guidance.
  - They need a system that tracks and organizes multiple characters, NPCs, and campaign elements in one place to ensure smooth management across games.
  - A system that automatically generates NPCs or character stats based on Sasha's input would save valuable time.
  - Tools that offer player-friendly features, like guided character creation or pre-built options, to make the process efficient and less time-consuming.
  - Mobile and remote access are essential so players can update characters, and Sasha can manage campaigns without in-person interactions.

- **Pain Points:**
  - Sasha often feels pressed for time and can't dedicate hours to walk players through character creation or leveling up.
  - Managing many characters and campaign threads can become overwhelming, especially when handled across multiple systems or platforms.
  - Creating unique and engaging NPCs quickly is a challenge, and tools that don't automate some of these tasks make DMing more time-consuming.
  - Sasha needs a solution that empowers players to take charge of their characters while still maintaining consistency and organization across campaigns

2.3 Persona 3 - Emma [DM]

Role:
Emma is a Dungeon Master (DM) who specializes in crafting homebrew content. Her

passion lies in creating custom items, classes, feats, and skills to give her campaigns a unique flair. She's always pushing the boundaries of what's possible in the game and wants her players to fully engage with her customized world.

Biography:

Emma has been a DM for several years, known for her creativity in developing one-of-a-kind campaigns filled with custom content. She thrives on building original classes, spells, feats, and magical items, often tailoring them to fit her campaign's lore or to address player requests. For Emma, the magic of DMing comes from the freedom to modify the game's mechanics to suit her vision, allowing her to break free from standard rules and experiment with new ideas.

However, managing this level of customization can be challenging, especially when she has to manually track and update multiple spreadsheets or notes for homebrew content. Emma wants a streamlined way to add, modify, and share her custom creations with her players, without sacrificing time that could be spent world-building or preparing exciting encounters. She often introduces new homebrew rules during campaigns and needs a tool that can keep up with her evolving content.

Needs:

- A homebrew-friendly tool where Emma can easily design and share customized classes, feats, skills, and magic items.
- A way for players to browse and incorporate her homebrew content into their characters without her direct intervention, allowing them to fully explore her unique world.
- A system that automatically calculates the effects and interactions of custom items or abilities, so Emma doesn't have to track changes manually.
- An intuitive interface for adding new homebrew content mid-campaign, ensuring that updates are immediately accessible to players.
- The ability to create custom templates for feats, classes, and skills, which can be quickly adapted for future campaigns or characters.

Pain Points:

- Existing tools often limit or complicate the creation of homebrew content, forcing Emma to create workarounds or manually input data into multiple platforms.

- Managing balance between homebrew and standard rules can be difficult, especially without automated calculations or content validation.
- Players sometimes struggle to understand how to incorporate custom feats or skills into their characters, leading to frequent clarifications or reworks during gameplay.
- Emma spends more time than she'd like organizing and explaining homebrew content, which takes away from her creative energy and focus on storytelling.

2.4 Persona 4 - Jimmy [New Player]

Role:
Jimmy is a new Dungeons & Dragons (D&D) player who wants to quickly learn the mechanics of the game, focusing on character creation, spellcasting, and item usage. He seeks an intuitive way to understand how these mechanics work without getting bogged down by complex rules and terminology.

Biography:
Jimmy is excited to join his first D&D campaign but feels overwhelmed by the game's mechanics. He's eager to create his first character, but terms like "ability scores," "proficiency bonuses," and "spell slots" are confusing. While he's heard D&D is a great way to role-play and have fun, he's primarily focused on learning the core mechanics that will allow him to play without slowing the game down for others.

Jimmy has little experience with tabletop RPGs, so the character creation process, particularly selecting stats, spells, and equipment, is intimidating. He wants to quickly understand how to choose abilities and spells that suit his character, how to use them during the game, and how items like weapons and magical gear affect gameplay. Jimmy doesn't want to spend hours sifting through rulebooks; he needs a streamlined, interactive tool that teaches him the basics step by step.

Needs:

- A simple, guided character creation system that walks him through choosing a race, class, abilities, and spells, explaining what each choice means and how it will affect his character in-game.

- A tool that automatically calculates key stats like attack bonuses, saving throws, and proficiency modifiers, showing Jimmy how these numbers impact gameplay (e.g., attack rolls or saving throws).
- Clear, accessible explanations of spell mechanics: how spell slots work, how to prepare and cast spells, and how to choose spells that align with his character's strengths.
- An inventory management system that shows how items (especially magical ones) affect his character's stats and abilities, with explanations of how and when to use them during gameplay.
- Examples and visual aids that break down complicated concepts like spellcasting, skill checks, and combat mechanics in simple terms, giving Jimmy the confidence to participate in the game without constantly needing help.

Pain Points:

- The character creation process feels overwhelming with too many unfamiliar terms and mechanics (e.g., ability scores, skill proficiencies, spell levels).
- Managing spells and items is confusing; Jimmy doesn't understand how to select, prepare, or use spells or how magical items interact with his character's stats and abilities.
- Existing tools and guides often assume a basic level of knowledge, making it hard for Jimmy to grasp how to properly create and play his character.
- He feels anxious about not knowing the mechanics and slowing down the game when it comes to combat, spellcasting, or using items effectively.

2.5 Persona 5 - Aiden [OG Player]

Role:
Aiden is an old-school Dungeons & Dragons (D&D) player who has been playing D&D using pen and paper for most of his life. He's skeptical of digital tools, preferring the feel of filling out his character sheet the traditional way. However, with most of his friends and DMs switching to digital platforms, he is reluctantly seeking a way to transition without losing the tactile and nostalgic experience of sitting at a physical table with physical tools.

Biography:

Aiden started playing D&D in the early 90s, back when rulebooks and dice were the only resources you needed. He takes pride in his collection of dog-eared manuals, handwritten character sheets, and worn dice sets. Over the years, he has been a player and Dungeon Master (DM) in numerous campaigns. Although he recognizes the potential of digital tools, he worries that switching to these platforms might take away from the immersive, personal connection he feels with the game. He is looking for a way to embrace the modern age of gaming without feeling like he's giving up the tactile experience that defines D&D for him.

Needs:
- A seamless way to create and manage characters digitally while preserving the feel of pen-and-paper character creation.
- A tool that feels intuitive and familiar, rather than overly technical or sterile.
- A way to easily join games with friends who are already using digital tools without feeling out of place.
- The ability to track and reference character stats and abilities without losing the personal touch of making notes and customizations.
- Features that can capture the atmosphere of tabletop gaming, such as customizable sheets, virtual dice rolls, and visual representations of old-school designs.

Pain Points:
- Overwhelmed by the complexity and impersonal nature of existing digital D&D tools.
- Frustrated with digital interfaces that feel too mechanical or game-like, taking away from the role-playing immersion.
- Struggles to find a tool that maintains the nostalgic and tactile elements of character creation while still being functional and modern.
- Dislikes being forced into a system that feels rigid or not customizable to his specific needs and play style.
- Fears losing the social and emotional aspects of gaming when transitioning from a physical tabletop to a digital space.

3. Functional Requirements (User Stories)

3.1 Epic 1: Character Creation and Customization

User Story	Acceptance Criteria
As **Gabe**, I need a flexible character creation tool that allows me to experiment with stats, classes, and features, updating in real-time, so that I can easily test new ideas without starting from scratch.	- Users can add edit stats, classes, and feats - Changes are reflected in real-time - Changes can be saved or discarded - Session history is saved so that changes can be tested without the user having to start from scratch
As **Sasha**, I want a system that players can use independently for character creation and leveling, reducing the need for direct involvement while organizing across multiple campaigns.	- Characters can be created and edited independent of a campaign - Leveling up does not require DM intervention or assistance - The process has its own guidance system, requiring little guidance from another party
As **Emma**, I need a homebrew-friendly tool to create and share custom content like classes and feats, enabling players to fully engage with my unique world without confusion.	- Homebrew classes, feats, and tools can be created - Homebrew classes, feats, and tools can be shared - Homebrew elements can be integrated with existing sheets and characters to facilitate engagement and ease-of-use
As **Jimmy,** I want a guided and interactive character creation tool that simplifies the process, explaining key mechanics, so I can quickly understand how to build a character.	- There is a tutorial option for new players that guide them through character creation - The character creation guide doesn't just explain the UI but also D&D concepts in an intuitive manner - The character creation process is neither tedious nor bogs down the user with unnecessary or confusing information

User Story	Acceptance Criteria
As **Aiden**, I need a digital tool that captures the essence of pen-and-paper character creation while allowing me to manage my stats and customizations digitally.	- There should be themes of pen and paper - There is a notepad to just write notes or draw ideas - There should be an option to just manually make changes to the final sheet - Option to flip through books and resources

3.2 Epic 2: Campaign and Character Management for DMs

User Story	Acceptance Criteria
As **Sasha**, I need a comprehensive system to track and manage multiple characters, NPCs, and campaign elements, ensuring smooth and organized gameplay across various campaigns.	- The system allows Sasha to create, edit, and delete characters and NPCs. - Each character and NPC can have attributes including name, class, race, level, alignment, abilities, and notes. - Sasha can filter and sort characters and NPCs by various attributes (e.g., name, class, level). - The system provides the ability to create, edit, and delete campaigns. - Sasha can assign characters and NPCs to specific campaigns, with each campaign displaying a list of associated characters and NPCs. - The system supports at least 10 concurrent campaigns, each with up to 50 characters or NPCs. - Each campaign and character has a timeline view where Sasha can add, view, and edit game session notes, character arcs, and milestones.
As **Emma**, I want a system that can handle my evolving homebrew rules and content mid-campaign, so I can update my custom content and make it immediately accessible to players without losing time on manual adjustments.	- The system allows Emma to create, edit, and delete homebrew rules, items, spells, and abilities during an active campaign. - Emma can assign these custom rules and content to specific characters, NPCs, or campaigns. - Emma can categorize custom content by type (e.g., rule, item, spell) and assign it to specific campaigns or universally across all campaigns - The system enables real-time updates to homebrew rules and content without requiring players to refresh or re-login.

As **Aiden**, I want a tool that feels intuitive and familiar, helping me join games with friends who use digital platforms without sacrificing the nostalgic tabletop experience I love.	- A visual drag-and-drop feature must be available for arranging character stats and inventory items. - Users must be able to export their character sheets in PDF format and share them directly via a "Share with Friends" button that links to popular platforms (Discord, Roll20, Foundry VTT). - The design must include an option for users to view the character sheet in a traditional tabletop style (e.g., parchment paper background, classic D&D fonts). - There should be an option for users to print their character sheets in a format that closely resembles physical D&D sheets, maintaining a nostalgic look and feel. - The layout must be customizable to closely resemble user preferences, offering at least 3 different layout styles (e.g., grid, list, or card view).
As **Gabe**, I need a feature that shows me the possible combinations of classes, races, and feats, highlighting overlaps and conflicts, so I can build optimal characters with unique abilities.	- The system must generate a list of all valid class, race, and feat combinations within 5 seconds after the user selects a starting class or race. - The feature must highlight conflicting abilities (e.g., feats or traits that are incompatible) in red, and optimal combinations (e.g., class and feat synergies) in green, with 90% accuracy according to D&D 5E rules. - The system must flag conflicting choices (e.g., incompatible race-class or class-feat combinations) and prevent users from selecting invalid combinations, with a detailed explanation displayed within 1 second of conflict detection.
As **Jimmy**, I need a system that explains how items, features, and spells affect my character's stats, allowing me to use them effectively during gameplay without confusion.	- The system must display clear and concise descriptions of how each item, feature, or spell affects the character's stats (e.g., attack bonus, hit points, armor class), with the changes reflected in real-time on the character sheet. Updates to the character sheet based on new selections should occur within 1 second of the change. - A tooltip or expandable section must be available for each item, feature, or spell, providing detailed explanations of its mechanics (e.g., how long a spell lasts, specific bonuses from equipment), ensuring 90% of items and abilities are explained in a way that a new user can understand within 2 clicks. - At least 95% of game mechanics involving spells, items, or features must include example use cases or scenarios (e.g., "use this spell when..."), with no more than 2 levels of navigation needed to access these examples from the character sheet.

3.3 Epic 3: Automation, Accessibility, and Player Empowerment

User Story	Acceptance Criteria
As **Sasha**, I want tools that automate NPC creation and stat generation based on my inputs, so I can focus on storytelling and save time.	• Given a user inputting a descriptive text (e.g., "A tall, mysterious elf with a dark past and a knack for archery"), the tool must generate an NPC profile with a name, appearance, personality traits, background, and relevant stats that align with the description, within 10 seconds. • The system must interpret at least 80% of descriptive inputs to accurately generate appropriate character traits (e.g., "mysterious" maps to high stealth, "knack for archery" maps to high dexterity) based on predefined rules, ensuring logical alignment between the description and stats. • The user must be able to customize the NPC's stat parameters (e.g., strength, intelligence, charisma) by providing numerical ranges, and the system must generate stats that fall within these parameters at least 95% of the time. • The tool must provide at least two export options (e.g., PDF, JSON) for the generated NPC profile, allowing the user to save or share the NPC information within 5 seconds after generation.
As **Emma**, I need a system that automatically calculates the effects and interactions of my homebrew content, ensuring balance and reducing manual tracking.	• When a user modifies a homebrew item (e.g., changing its damage type or duration), the system must recalculate its effects and interactions with the character and campaign, updating any necessary stats or interactions in real-time, with the changes reflected within 3 seconds. • Given homebrew content (e.g., spells, abilities, items) input by the user, the system must automatically calculate effects, bonuses, and interactions with existing mechanics (e.g., ability modifiers, resistances, class features) and provide a result summary within 5 seconds of submission.

User Story	Acceptance Criteria
As **Jimmy,** I need a tool that automatically rolls, calculates, and displays stat rolls needed to play the game, without me having to do calculations by hand or factor in items, feats, or abilities	- Given a user initiating a stat roll (e.g., attack roll, saving throw, skill check), the system must automatically roll the dice, apply all relevant modifiers (e.g., from items, feats, abilities), and display the final result in under 3 seconds. - The system must factor in bonuses or penalties from items, feats, and abilities, ensuring that 100% of calculated rolls reflect the correct modifiers based on the character's current stats and equipment. - After a roll is made, the user must be able to view a breakdown of the roll (e.g., base roll, item bonuses, ability modifiers) in a clear format, with the option to review at least the last 5 rolls within 2 clicks.

3.4 Epic 4: Sign-Up, Sign-In, and Security

User Story	Acceptance Criteria
As **Gabe**, I need a quick and easy sign-up process with the ability to sign in across multiple devices, so I can access my character ideas on the go, whether I'm at home or out.	- Given a new user, when they input valid email, password, and complete any required verification steps, then they should be able to successfully create an account within **2 minutes**. - Upon successful sign-up, a confirmation email should be sent, and the user should be able to log in without issues after verifying their email. - Given an existing user, when they attempt to log in from any device (e.g., phone, tablet, or desktop), their account credentials must allow them to successfully access their profile and character data from **at least two different devices** within **10 seconds** of the login attempt.
As **Sasha**, I need a secure login system to protect my campaign data and ensure that only authorized players can access sensitive game elements.	- The system must require users to authenticate using a secure login method (e.g., email and password or OAuth-based login) and ensure that only authorized users can access specific campaign data. Unauthorized login attempts must be blocked 100% of the time, and users must receive appropriate error messages within 2 seconds of a failed attempt. - The system must enforce secure password policies, requiring passwords to be at least 8 characters long, contain a mix of letters, numbers, and special characters, and undergo hashing using industry-standard encryption methods (e.g., bcrypt or Argon2). The password storage and encryption must meet these standards 100% of the time.

	● The system must implement role-based access control, allowing campaign owners (Game Masters) to assign roles (e.g., player, admin, guest) and restrict access to sensitive game elements (e.g., hidden campaign notes, NPC details). Players must be able to access only the data relevant to their role, and at least 95% of role assignments must correctly enforce these access restrictions.
As **Emma**, I need a secure system that allows me to manage and share my homebrew content with specific players, ensuring that only authorized users can view and use it.	● The system must enable Emma to easily modify or revoke access to homebrew content for any player at any time. Changes to access permissions (e.g., removing a player's access) must take effect immediately, with at least 90% of updates applied within 5 seconds.
As **Jimmy**, I want a simple sign-in process that doesn't overwhelm me with technical details, allowing me to quickly get into the game and start learning the mechanics.	● The system must offer at least two easy-to-use sign-in options (e.g., email/password or third-party authentication like Google or Facebook) and remember the user's credentials (with consent) to streamline future sign-ins, reducing sign-in time by 50% for returning users. ● The sign-in interface must be simple and intuitive, with minimal technical jargon. At least 95% of users should be able to complete the sign-in process without needing additional help or instructions, as measured by user feedback or support request statistics. ● The sign-in process must allow Jimmy to log in with no more than two steps (e.g., email and password entry or social media login via OAuth) and take no longer than 10 seconds from start to completion, 90% of the time.

4. Quality Requirement

4.1 Simplicity:

Description:

The prime responsibility of Vellum is to be a simple-to-use platform that streamlines the D&D character creation process and the management of campaigns. Every feature implemented should make playing D&D an easier task, whether that be calculating stats or building a character from the ground up.

4.1.1 Usability Testing for Core Features

- **Objective:**
  Ensure that users can quickly use Vellum to perform core tasks (e.g., creating a character, calculating stats, managing a campaign) without external assistance.
- **Procedure:**
    - Time 10 novice and experienced users unassisted through the character creation process and ensure that they can create a character in less than 5 minutes from start to finish
    - Time automated stat rolling with goal of calculations not exceeding 5 seconds after all inputs are entered
    - Time automated tests of navigating to various campaign and character elements
- **Success Criteria:**
    - On average, a user must be able to run through character creation in less than 5 minutes from start to finish
    - Automated stat rolling should not exceed 5 seconds from the time that all inputs are entered to the result displaying on the users screen
    - The campaign and character management system should take no more than 3 clicks or 10 seconds to access a campaign or character element (e.g., notes, NPCs)

4.1.2 Efficiency of Automated Features

- **Objective:**
  Verify that Vellum saves users time in automating stat calculation, spell management, character creation, and NPC generation compared to the manual D&D process
- **Procedure**
    - Benchmark how efficiently Vellum automates stat calculation against manual calculation
    - Measure the time taken for the system to generate fully fleshed-out NPC based on a simple user description
- **Success Criteria:**
    - On average, Vellum's stat calculation should be faster than manual ability save, ability check, attack, and damage calculation
    - The average time to generate a fully fleshed-out NPC based on simple user description should not exceed 10 seconds

4.1.3 User Feedback on Simplicity

- **Objective:**
  Certify that Vellum is easy to use, with clear instructions, using actual users instead of just automated tests.
- **Procedure:**
    - Collect feedback through post-use surveys that specifically ask about Vellum's ease of character creation, clarity of instructions, and ease of campaign management and navigation.
- **Success Criteria:**
    - At least 85% of users must rate their experience as "simple" or "very simple" on a 5-point scale (4 or 5 out of 5).

4.1.4 Minimalistic Onboarding Process

- **Objective:**
  Authenticate that Vellum is capable of onboarding new users and players quickly and easily without the feeling of being overwhelmed by instructions or technical terms
- **Procedure:**
    - Measure how long the onboarding process (including tutorial steps and first-time actions) takes using new users
    - Assess how many users can complete the onboarding process with no more than 5 brief tutorial pop-ups or instructions
- **Success Criteria:**
    - Onboarding process and
    - 90% of new users should be able to start using Vellum's core features within 5 minutes of sign-up, without requiring external help.

4.2 Cost:

Description:

Vellum is designed to be a free alternative to its competitors in the D&D character creation space. As a result, it is essential that all core features of the platform are free-to-use and can continue to be used without cost. Open-source elements and limiting the need to implement features with third-party paid sources are essential to the success and quality of the final product.

4.2.1 Core Features Accessibility Testing

- **Objective:**

  Test accessibility of core features of Vellum (e.g., character creation, stat calculations, NPC generation, campaign management) to ensure these features are fully available without any paywalls, subscriptions, or time limitations.

- **Procedure:**
  - Go through a list of Vellum's core features and make sure that each is available without subscriptions or cost
  - Survey at least 10 users to confirm that they did not encounter any paid prompts or limitations while accessing Vellum's core features

- **Success Criteria:**
  - All core features must remain accessible 100% of the time to all users without cost.
  - At least 95% of users surveyed should confirm they did not encounter any paid prompts or limitations while using core features.

4.2.2 Third-Party Services Evaluation

- **Objective:**

  All third-party services must either operate on free tiers without impacting functionality or use open-source/self-hosted alternatives.

- **Procedure:**
  - Review all integrations with external services (e.g., cloud storage, hosting, data processing tools) to ensure they either:
    - Offer a free tier that fully meets Vellum's needs, or
    - Are replaced by open-source or self-hosted alternatives.

- **Success Criteria:**
  - At least 90% of core feature functionality must rely on open-source or free-to-use third-party tools.

4.3 Device Interaction:

Description:

Inspiration for D&D character creation and campaigns can strike at any moment. As a result, Vellum is designed to be a quick and simple tool that can run on any device, whether that be an iPhone, Android tablet, or Linux computer, and seamlessly provide all the features that a D&D player or DM needs to build characters and stories.

If a feature is available and intuitive on one platform, it should provide comparable, if not the same, experience on all other platforms.

4.3.1 Regression Testing After Platform Updates
- **Objective:**
  Verify that *Vellum* continues to work seamlessly after updates to any major operating system or browser.
- **Procedure**:
  - After any OS or browser update, perform regression testing on core features across all platforms, especially those that commonly affect compatibility (such as input fields, animations, and dynamic content loading).
- **Success Criteria**:
  All core functionalities operate as expected post-update without new platform-specific bugs or performance degradation.

4.3.2 Performance Benchmarking Across Platforms
- **Objective**:
  Ensure *Vellum* operates smoothly, with comparable load times and performance metrics on all devices.
- **Procedure**:
  - Measure load times for the application on various devices and networks, testing key workflows (e.g., login, character creation, and campaign loading).
  - Run automated performance tests on each platform, focusing on metrics like time-to-interactive, animation responsiveness, and frame rate stability.
- **Success Criteria**: All core functionalities load within 2 seconds on average across devices, with a time-to-interactive under 3 seconds, and no noticeable performance lag on any supported platform.

4.3.3 Cross-Device Compatibility Testing
- **Objective**:
  Confirm that *Vellum* operates consistently across all major devices and platforms.
- **Procedure**:
  - Test the application on a representative set of devices:
    - **Mobile**: iOS (iPhone), Android (various models)

- - **Tablet**: iPadOS, Android tablets
    - **Desktop**: Windows, macOS, Linux
  - Execute critical user journeys, including character creation, campaign management, and navigation on each device.
  - Document and analyze any inconsistencies in functionality or layout between platforms.
- **Success Criteria**: All features function identically, with consistent appearance and responsiveness across all tested devices.

5. Out of Scope

5.1 Dice Rolling Visuals:

Currently, Vellum is designed to make character creation and management easy and support the core features of the game. Virtual dice-rolling does not fall under this goal. As a result, at current, implementing dice-rolling graphics and rendering is not a critical feature to implement. In future sprints, after the platform's core features have been implemented, virtual dice customization and rolling may be implemented and explored, but not implementing this feature will not detract from accomplishing the platform's purpose.

5.2 Tabletop Simulation:

Since tabletop simulation and battlemap support often requires dedicated servers and personal modifications that change from game to game, Vellum will remain specific to just character creation and management. Further iterations of the application may add support for realtime battlemaps, but it remains critical that Vellum fulfills its goal as a character creation tool that can manage characters in a campaign before such features are implemented.

5.1 Other TTRPG Systems:

Vellum is currently geared towards Dungeons & Dragons 5th Edition. Since catering towards other TTRPG systems requires significant changes to the UI, architecture, and mechanics of the overall platform, the scope of the project will remain specific to D&D 5E and possibly expand out to other systems when established in the D&D space.

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