



RoleCall

Team Silver



Table Of Contents

Elevator Pitch	3	Competition Matrix	15
Team Bio	4	Development Tools	18
Problem Statement	5	Major Functional Components	19
Problem Characteristics ..	7	Risks	21
Current Process Flow	8	Work Breakdown Structure	26
Solution Statement	9	Algorithms	30
Solution Process Flow	10	Real World Product vs Prototype Table ...	35
What it Will Do	11	Entity Relationship Diagram	37
What it Will Not Do	14	Dependencies	40



Elevator Pitch

Players of tabletop roleplaying games (TTRPGs) face numerous challenges when organizing gameplay sessions.

RoleCall offers players a smoother experience with a tailored selection of game sessions. Utilizing customized preference filters, this selection helps players build their ideal gaming group.

RoleCall also serves as a marketing tool for gaming companies and stores looking for consumer data and community interaction.



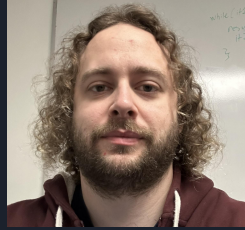
Team Bio



Berhan Clark



Chris Skeens



Sebastian Childers



Wyatt Cake



Bradley Hampton



Problem Statement

Tabletop players find it difficult to discover and organize games with other people. However, the tools available to them that are meant to help with this process are overly time consuming and inefficient.



TTRPG Breakdown

A tabletop role-playing game (TTRPG) is a special kind of board game traditionally played in a fictional setting. The game is played between a designated game master (GM) and the rest of their players.

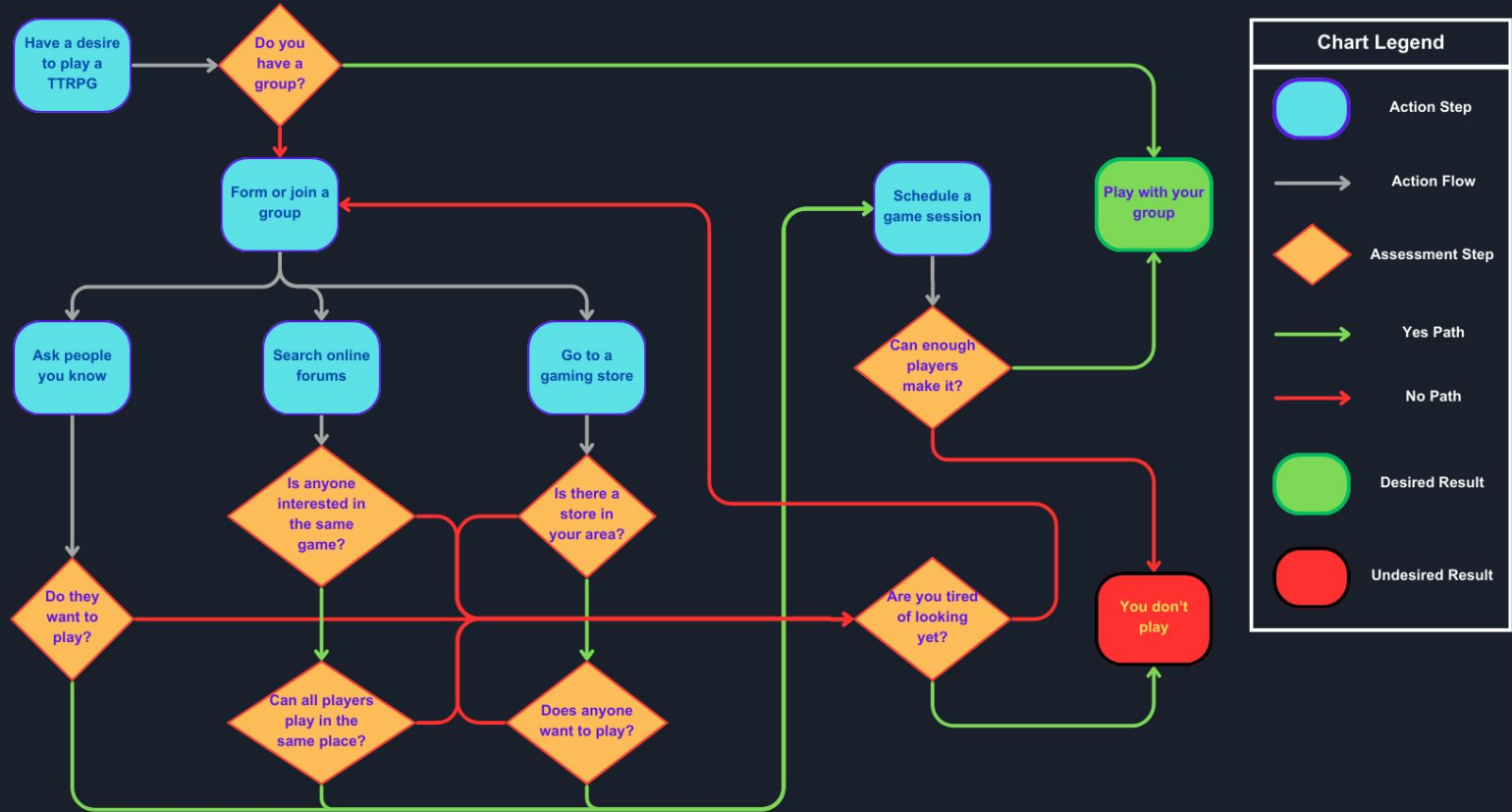
The game master's role is to craft the rules, setting, and world that the players will interact with. This process is referred to as crafting a campaign. And these campaigns can last anywhere from a few weeks to a few years depending on the group of players.



Problem Characteristics

- **Geographical Constraints** : Difficulty in locating local players for in-person groups
- **Organizational Challenges** : Coordinating meeting times and locations for group play
- **Player Flakiness** : Inconsistent attendance and commitment from players disrupts game continuity
- **Mismatched Preferences** : Varied player preferences may lead to incompatible gaming styles
- **Negative Stereotypes** : Social Stigma surrounding TTRPGs may discourage potential players
- **Entry Barrier** : High initial cost and learning curve may deter new players
- **Rule Dispute** : Conflicts arising from differing interpretation of game rules and mechanics

Current Process Flow



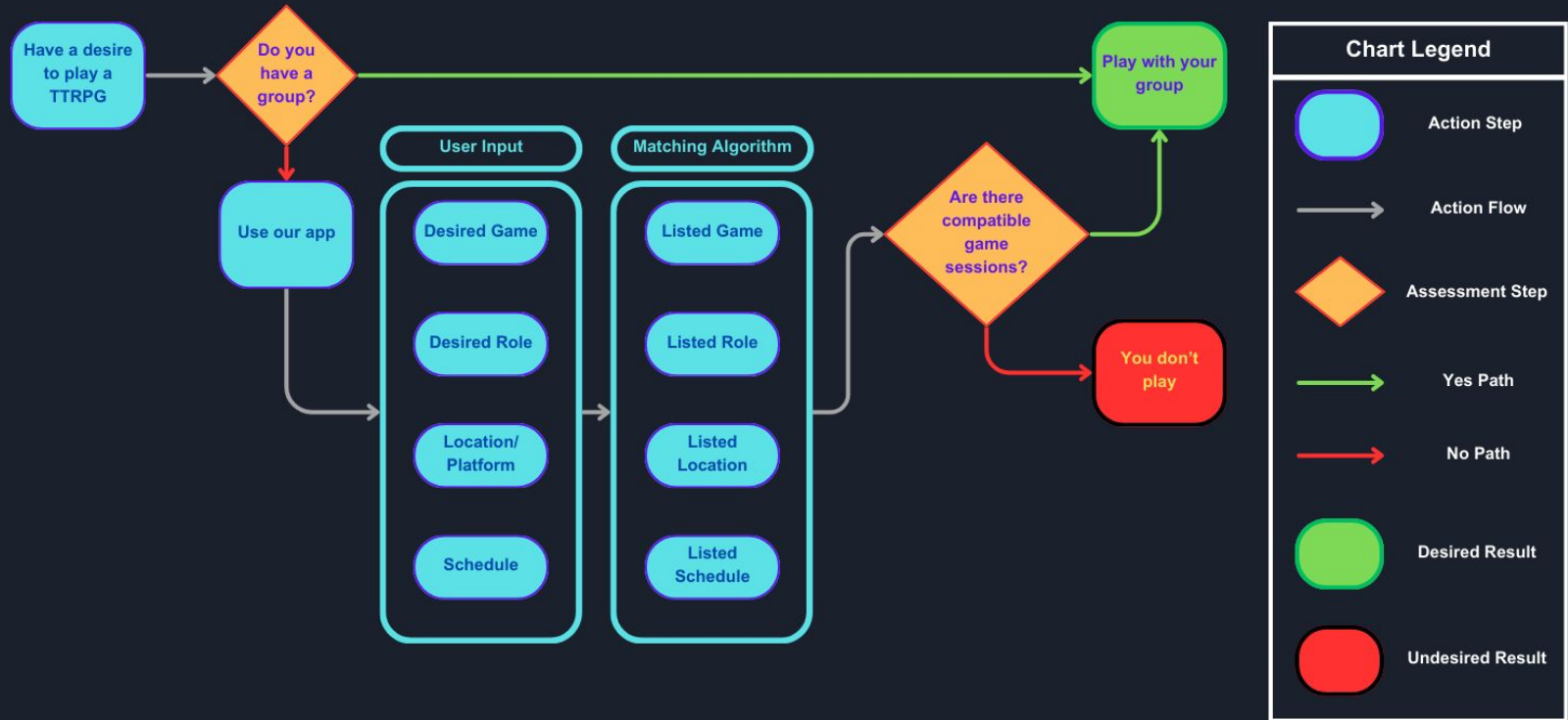


Solution Statement

RoleCall is a multiplatform application that allows for faster tabletop game organization by automatically matching profiles based on user type and profile characteristics.

- Create a player or gamemaster profile
- Receive updates when matches are found
- Spend more time playing and less searching
- Local game stores act as an optional meeting place

Solution Process Flow





What it Will Do ^{1/3}

Game Masters (GMs):

Enable GMs to create listings for their games and get Players, specifying the:

- Game
- Schedule
- Specific roles needed for the campaign
- Location where play sessions will be held

Link GMs to platforms/resources that they can use to actually host the play sessions.



What it Will Do ^{2/3}

Enable a Player to create and update a Profile specifying their desired:

- Game
- Schedule
- Role/playstyle
- Location (online, or in-person)

Based on their Player Profile and available listings:

- Automatically provide Players with a stack of listings that are a potential match.
- Automatically provide GMs with a stack of players that are a potential match.
- When both the Player and GM approve the match, they are connected via chat.



What it Will Do ^{3/3}

Game Stores:

Share store information, including:

- Seating availability
- Event schedule
- Location

Create listings for in-store events.



What it Will Not Do

- Serve as a platform to facilitate play-sessions.
- Behave as a “search engine”.
- Organize meetups other than TTRPG meetups.
- Act as a discussion board.



Competition Matrix

Features	RoleCall	Online Forums	Meetup Apps	In Person
Gaming Store interaction	Yes			Yes
Player Profiles	Yes	On Roll20		
GM Profiles w/ reputation	Yes	On Roll20		
Search events by time and location	Yes	Yes	Yes	



Competition Matrix (cont.)

Features	RoleCall	Online Forums	Meetup Apps	In Person
Organize online games	Yes	Yes	Yes	Yes
Organize in-person games	Yes	On r/LFG & Warhorn	Yes	Yes
Organize different types of games	Yes	Yes	Yes	Yes
Search for role/play-style	Yes			



Competition Matrix (cont.)

Features	RoleCall	Online Forums	Meetup Apps	In Person
Search by campaign length	Yes	On r/LFG		
Schedule recurring session	Yes		Yes	Yes
Block/avoid profiles	Yes	Yes	Yes	
Automated session matching	Yes			



Development Tools

IDE:	Visual Studio Code
Version Control:	Git
Programming Language (Backend):	MySQL, Flask, Python
Programming Language (Frontend):	Dart
Testing Framework:	Dart
Documentation Tool:	Dart Doc



Major Functional Components

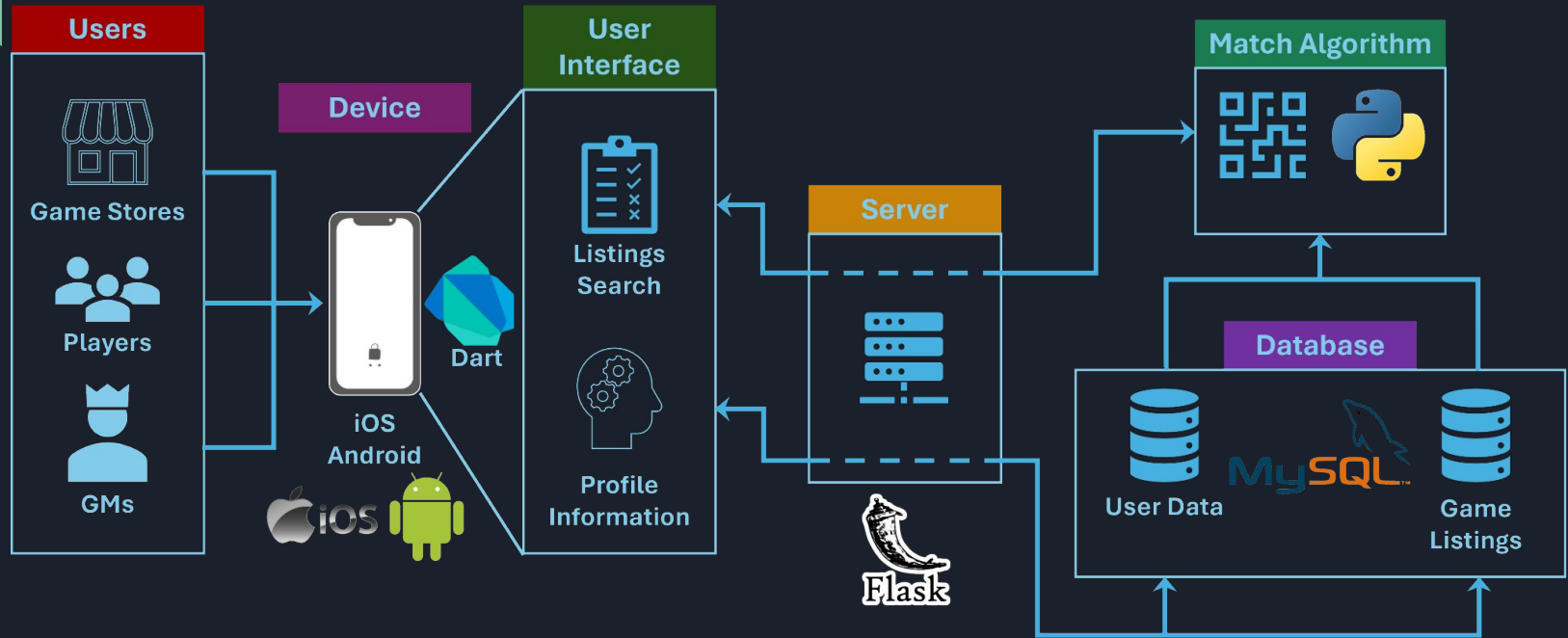
Operating System(s): Android and iOS via Dart

Web Server: Flask

Database: MySQL

Server-side Language: Python

Major Functional Components Diagram



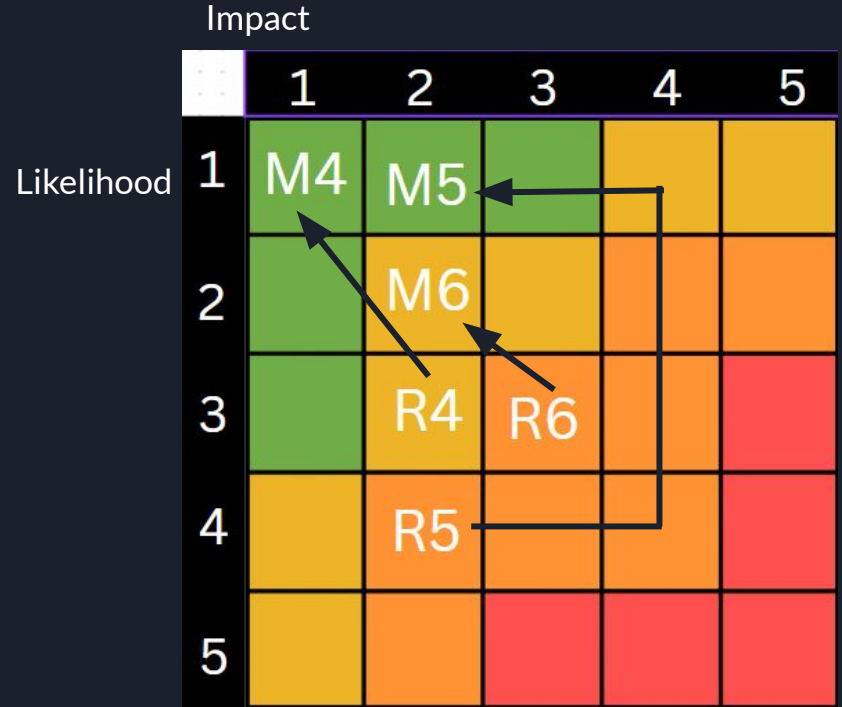
Customer Risks

- **Customer Risk 1:** If not many people use the app and a user would like to play, then they may not be matched to any/many groups.
 - **Customer Mitigation 1:** Increased app advertisement.
- **Customer Risk 2:** If there are more Players looking for groups than GMs creating groups, then many players will be left out.
 - **Customer Mitigation 2:** If GM count is low incentivize players to become GM's by sending out notifications recommend that "this is a great time to become a GM".
- **Customer Risk 3:** If there are more GMs creating groups than Players making groups, then many groups will go unfilled.
 - **Customer Mitigation 3:** When listings database slips outside of ideal ratio (4-6 Players per GM), make suggestions to users as they post listings to improve the ratio.



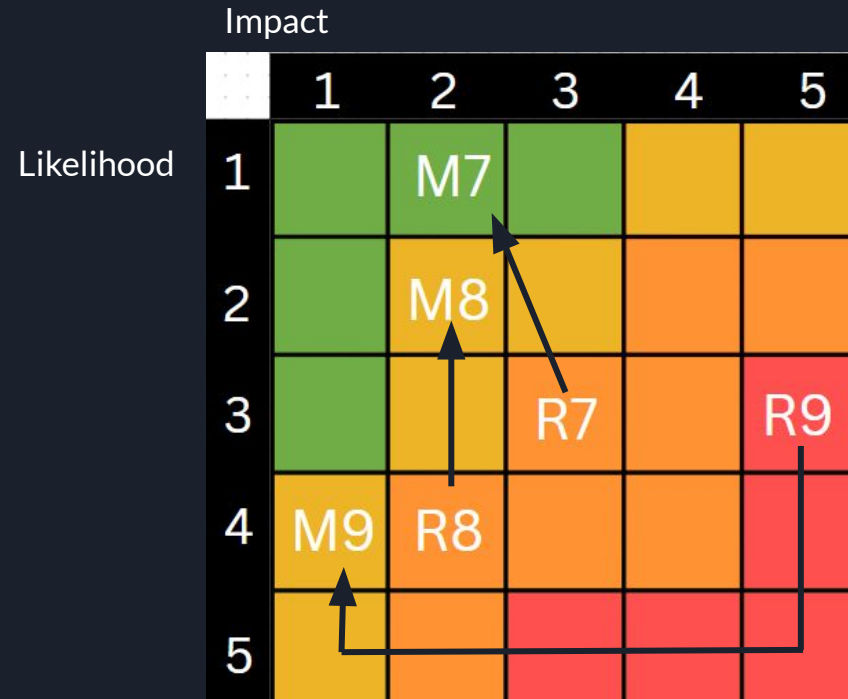
Customer Risks (cont.)

- **Customer Risk 4:** Do we have anyway to prove what Game stores is saying is true.
 - **Customer Mitigation 4:** Disclaimer about game store posts warn user about dishonest posts. Add a "report" and/or "review" system so that the community can filter out bad actors.
- **Customer Risk 5:** Players get matched with toxic GM's/ Toxic players are allowed on our service.
 - **Customer Mitigation 5:** Implement report and block features so users can avoid toxic users.
- **Customer Risk 6:** Players forget to show up to the session.
 - **Customer Mitigation 6:** Implement a session notification/reminder feature into Google Calendar/ other calendar apps.



Customer Risks (cont.)

- **Customer Risk 7:** Teenagers at the time of D&D release are 62 now. This older age could not be tech savvy or care to use the app.
 - **Customer Mitigation 7:** Simplified and user-friendly interface with a built in tutorial outlining how to use the app.
- **Customer Risk 8:** Without store participation, our app may struggle to deliver the full extent of its intended user experience and benefits. This could impact user satisfaction and the overall success of the platform.
 - **Customer Mitigation 8:** Enable integration with other social media platforms so that status updates are copied onto the RoleCall platform?
- **Customer Risk 9:** Our app may not meet the users needs or expectations, leading to low adoption rates.
 - **Customer Mitigation 9:** Have a test-group provide feedback on UI and general accessibility of the app and update and get to a good place before release.



Legal/Security/Technical Risks

- **Security Risk 1:** Data leaks could expose the location of user of the software.
 - **Security Mitigation 1:** Follow database best practices., Two-factor authentication and end-to-end encryption of user-data.
- **Legal Risk 1:** Liability of encouraging our users to meet up.
 - **Legal Mitigation 1:** When matching users, display warning/disclaimer advising to meet somewhere public for the first few sessions (game store, library, rec center, etc.)
- **Security Risk 2:** Users can use the app for nefarious purposes.
 - **Security Mitigation 2:** Have users sign a disclaimer in the Terms of Service that states that we are not responsible for any in person nefarious acts done by others.

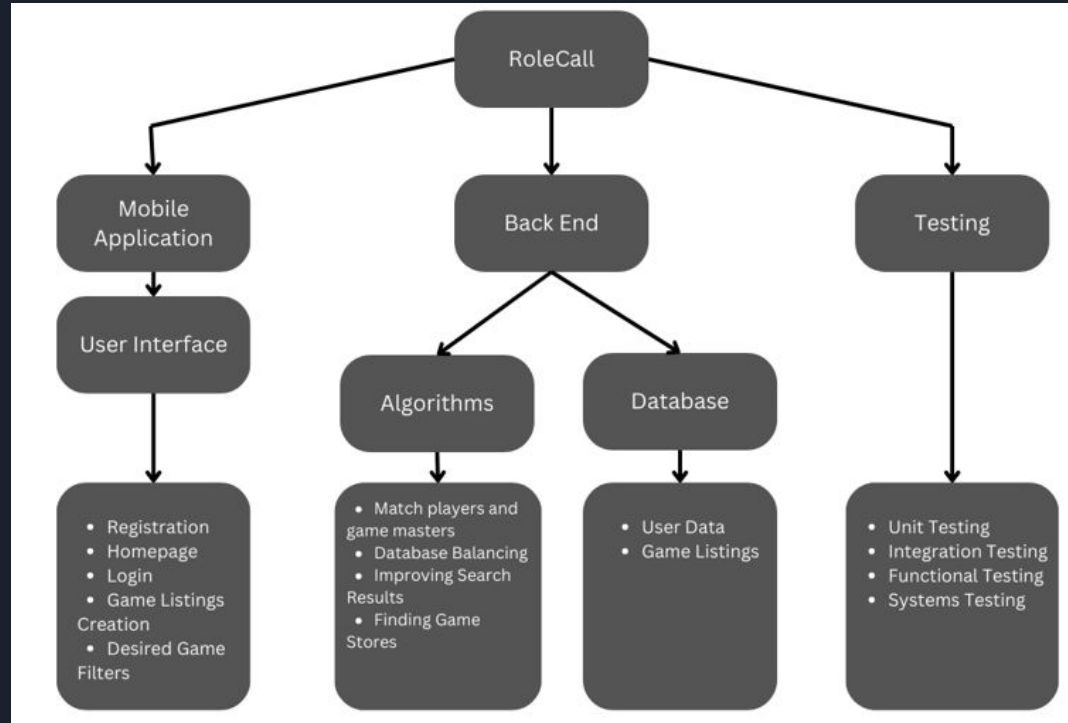


Legal/Security/Technical Risks (cont.)

- **Legal Risk 2:** The algorithm matching teenagers with adult strangers.
 - **Legal Mitigation 2:** Make app 18+ or implement parental controls.
- **Technical Risk 1:** Our app may not be designed to correctly handle a high amount of users. This could lead to decreased performance, and negative user experience.
 - **Technical Mitigation 1:** Follow database and server best practices anticipating scale. Stress test.

		Impact				
Likelihood	⬢⬢⬢	1	2	3	4	5
	1		LM2	TM1		
	2					
	3					TR1
	4					LR2
	5					

Work Breakdown Structure

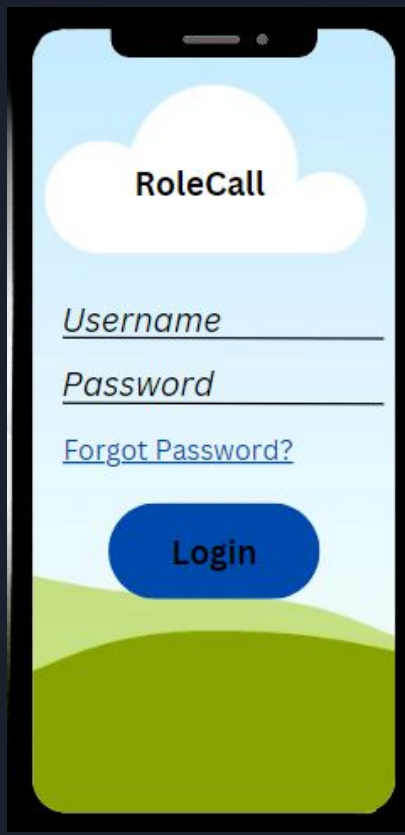


User Interface Mockups

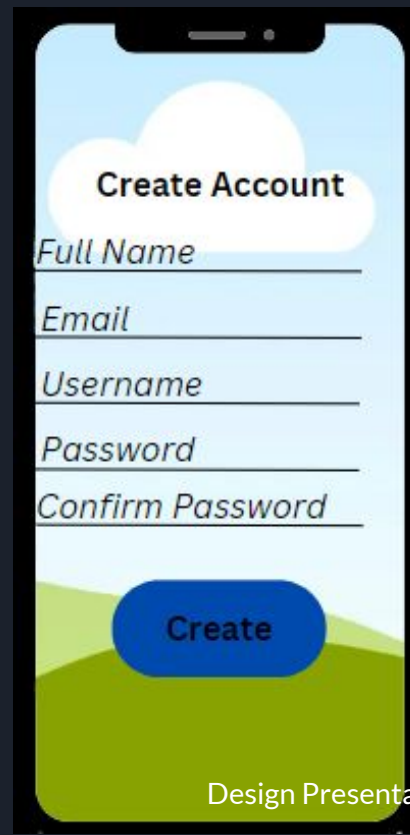
Start Page



Login Page

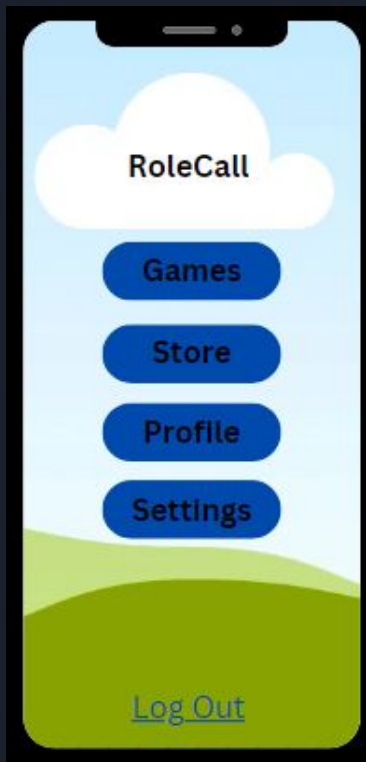


Account Creation

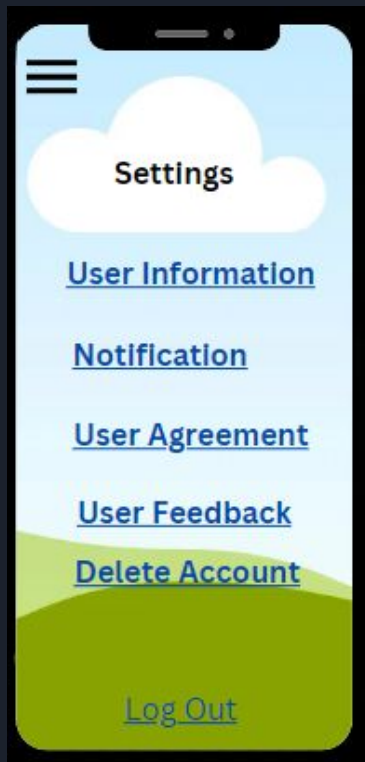


User Interface Mockups

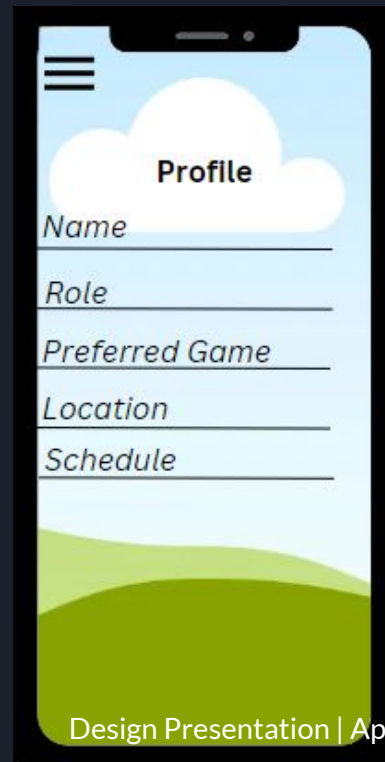
Home Page



Settings



Profile Page



User Interface Mockups

Game Listings Creation
(GM and Players)



Game Listings Creation

TTRPG Name

Roles Needed

Schedule

Location

Create Listing

Log Out

Game Listings Results
(Player)



Game Listings

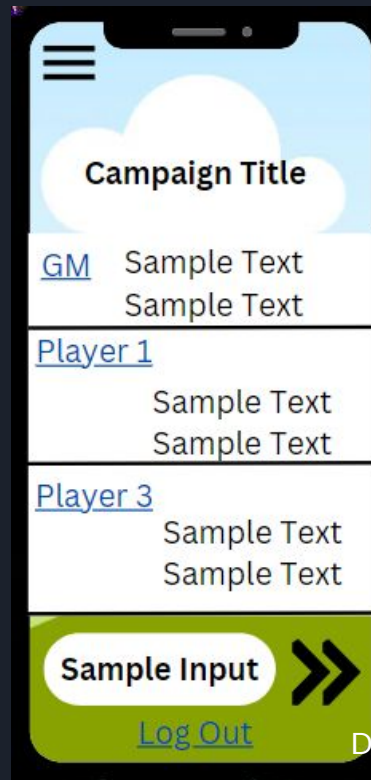
Game: DND
Host: MattMaster97
[Chat](#) [Session Details](#)

Game: Pathfinder
Host: xXErnestEmuXx
[Chat](#) [Session Details](#)

Page 1/6

Log Out

Chat Room



Campaign Title

[GM](#) Sample Text
Sample Text

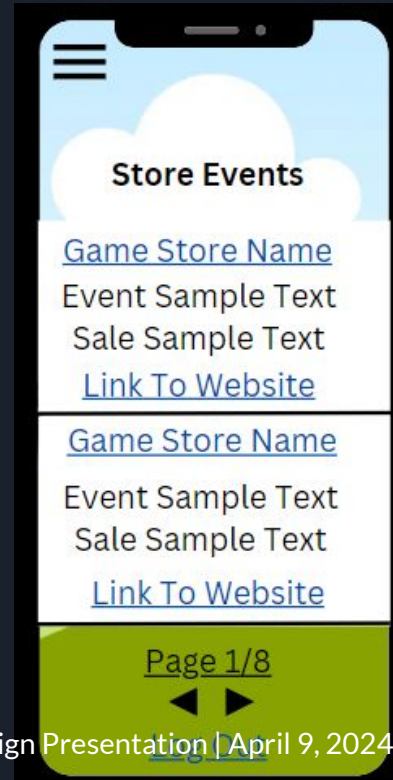
[Player 1](#)
Sample Text
Sample Text

[Player 3](#)
Sample Text
Sample Text

Sample Input >>

Log Out

Store Listings



Store Events

[Game Store Name](#)
Event Sample Text
Sale Sample Text
[Link To Website](#)

[Game Store Name](#)
Event Sample Text
Sale Sample Text
[Link To Website](#)

Page 1/8

Log Out



Algorithms ^{1/4}

Game matching

- Player or GM requests matching algorithm for one of their listings
- Determine listing type (Player or GM) for search filtering
- Search listings database with type filter (i.e. requests from Players only search GM listings and requests from GMs only search Player listings)
- Assign each listing a score based on:
 - Name of TTRPG - 0 or 1, with weight of 1.0
 - Location overlap - from 0 to 1, with weight of 0.4

$$\frac{|L_r \cap L_l|}{|L_r|} \quad L_r - \text{requested location range, } L_l - \text{listed location range in sq miles}$$

for range search, 0 or 1 for specific address or website

- Schedule overlap - from 0 to 1, with weight of 0.4

$$\frac{|s_r \cap s_l|}{0.5(|s_r| + |s_l|)} \quad s_r - \text{requested schedule in hours}$$

s_l - listed schedule in hours

- Desired role to play - 0 or 1, with weight of 0.2



Algorithms ^{2/4}

Game matching (cont.)

- Result score is calculated as

$$G * (0.4L + 0.4S + 0.2R)$$

G - result of name of game match

L - result of location match

S - result of schedule match

R - result of role match

- If matches with scores of 1.0 are found, return a list containing only 1.0 matches in any order
- If no 1.0 matches are found, return a list containing matches with > 0.8 in descending order of score



Algorithms ^{3/4}

Balancing the database

- Keep track of the ratio of Players to GMs for each TTRPG. The ideal ratio is 4-6 Players per GM
 - If the ratio is less than 4 when a GM requests the matching algorithm, display message suggesting they switch to a Player for better search results
 - If the ratio is greater than 6 when a Player requests the matching algorithm, display message suggesting they switch to a GM for better search results

Improving search results

- If no results >0.8 are found, evaluate individual terms in scores of listings that scored from 0.6 to 0.8. Determine which aspect of the search is the weakest link
- Offer suggestions to improve matching by altering search parameters based on listing trends
 - If schedule scores consistently low, show nearest most popular listed schedule range
 - If location scores consistently low, show nearest most popular listed location
 - If role scores consistently low, show three most popular listed roles



Algorithms 4/4

Finding game stores

- Player or GM requests local game store list
- Determine search range
- Return a list of all Game Store profile whose location is in the search range, sorted in ascending order by distance from middle of range

Real World Product vs Prototype Table

Feature	Detail	Real World Product	Prototype
User Profiles	Account Creation	✓	✓
	User Login	✓	✓
	User Information	✓	✓
Game Listing	Specify Listing Details	✓	✓
	Publish Listing	✓	✓
Match Players and GM's	Calculate matching score of listing	✓	✓

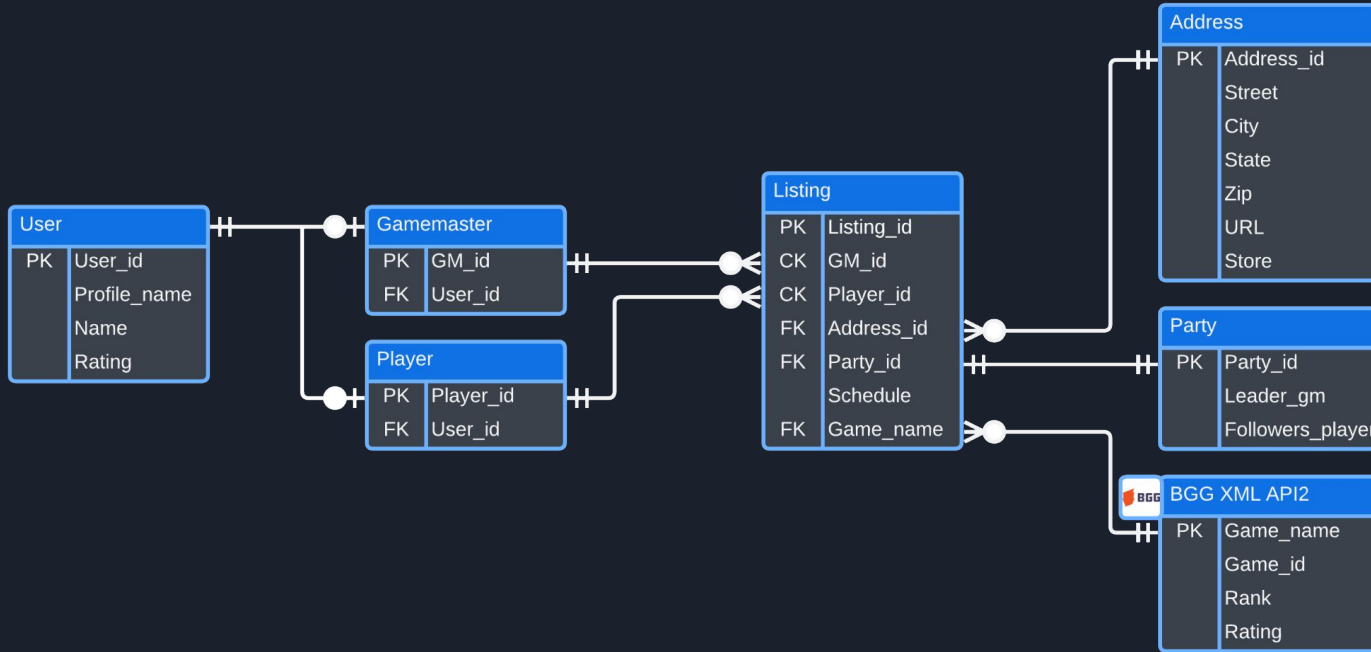
Real World Product vs Prototype Table

Feature	Details	Real World Product	Prototype
Match Players and GM's	Display listings above threshold	✓	✓
	Allow users to join listings	✓	✓
	Maintain balance of Players and GM's	✓	x
	Optimize User's search filters	✓	x
	Connect users via chat functionality	✓	✓

Real World Product vs Prototype Table

Feature	Details	Real World Product	Prototype
Game Store Interaction	Publish Store information	✓	✗
	Publish Store Events	✓	✗
Users and Game Store Interaction	View published store events based on location	✓	✗
	Retrieve Store information	✓	✗

Entity Relationship Diagram





Data Description

- User Data
 - User Profile Information
 - User Type
 - Player
 - GM
 - Profile Name
 - Rating
- Listing Data
 - Listing Type
 - GM_id
 - Player_id
 - Address
 - Street
 - City
 - State
 - Zip
 - URL
 - Store
 - Party
 - Leader
 - Followers
 - Schedule
 - Game
 - Name
 - Rank
 - Rating

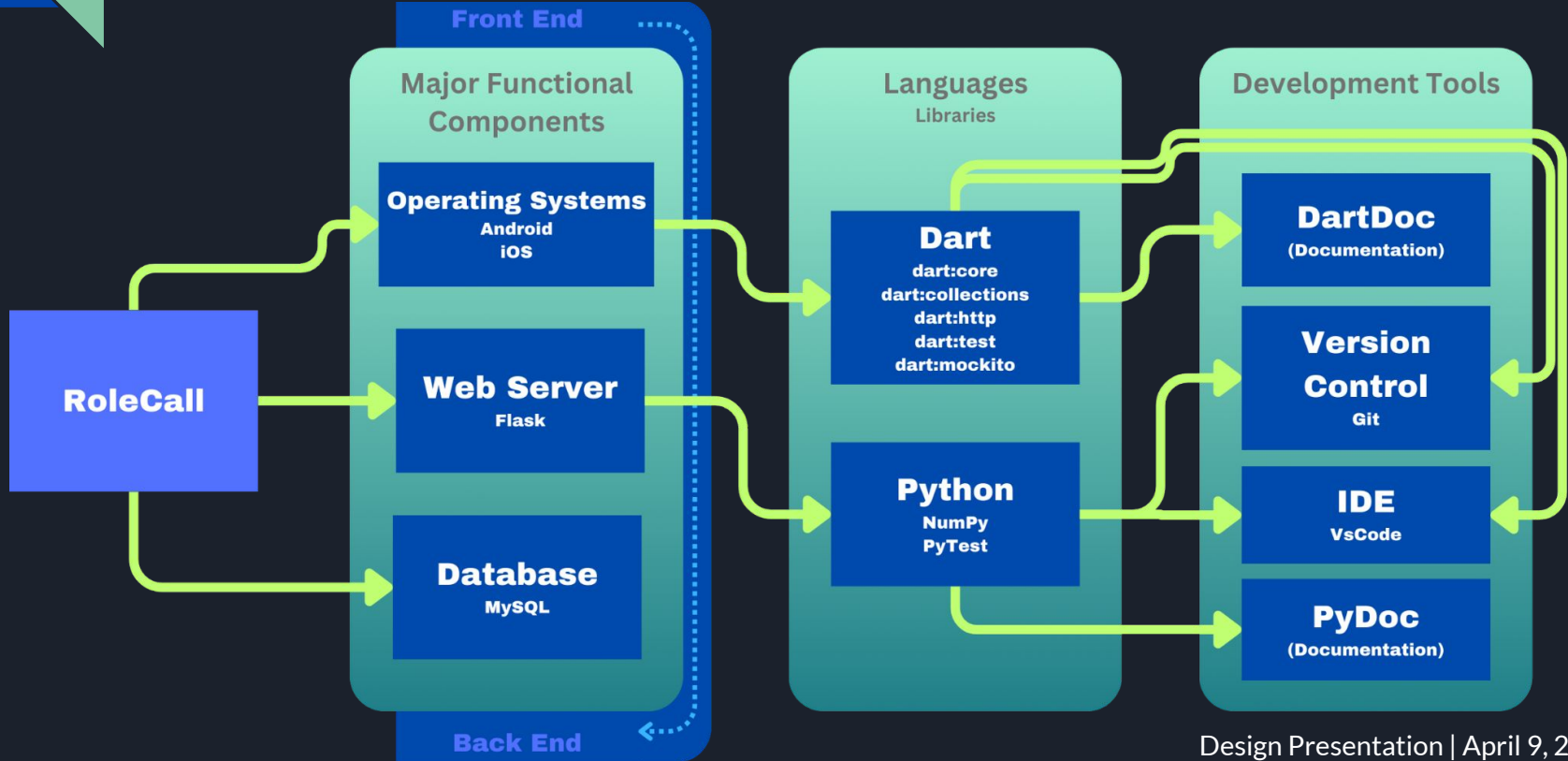


Data Generation

- Manually Entered
 - User Data
 - User Profile Information
 - User Type
 - Player
 - Gamemaster
 - Profile Name
 - Listing Data
 - Address
 - Schedule
 - Game
- Algorithmic
 - Result Score
 - Listing Score
 - Role Score
 - Location Score
 - Listing Type Ratio
 - Players to GM
 - Requested Store List
 - User Rating Score
- External Generation
 - API Interfaces
 - BBG
 - Game Name
 - Rank
 - Rating

Dependencies

Required Libraries, Tools, & Technologies





Conclusion

Players of TTRPGs can be overwhelmed and disheartened by the process of organizing a group to play with. RoleCall aims to ease the stress caused by this process. This will be accomplished through automating as much of the information filtering as possible, collapsing the process down to a single button press.



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Appendix

User Stories:

As a Game Master I want...

- to create a listing for my campaign.
- automated suggestions of players who might be a good fit for my campaign.
- to exchange chat messages with Players so that I can arrange play sessions.

As a Player I want....

- to communicate my availability, preferred games, and preferred playstyle.
- automated suggestions of listings of groups that I might enjoy and be a good match for.