

# Team 15 Product Backlog

Group 15: Joe Ruhe, Nicole Bain, Arielle Dong, Nathan Lytle

Email list:

Joe Ruhe: jruhe@purdue.edu

Arielle Dong: dong344@purdue.edu

Nicole Bain: nbain@purdue.edu

Nathan Lytle: lytlen@purdue.edu

## Problem Statement

Crossword puzzles are something that almost everyone has attempted in their life. Though, a near fact of doing crossword puzzles is that one will eventually need help or get stuck, and why not embrace that idea? Puzzle Party is our solution. An innovative way to solve crosswords together through a real time updated crossword puzzle, Puzzle Party can be a solution to the question “what do you guys want to do?” While there are some applications that allow for crossword puzzles to be completed cooperatively, we aim to have a more polished UI and have plans to add additional modes with other games as well. It’s also free, unlike the co-op that The New Yorker has.

## Background Information

Crossword puzzles are a regular staple in newspapers, puzzle books, and magazines, simultaneously offering entertainment and mental stimulation. However, crossword puzzle solvers often run into challenges and get stuck when trying to solve these puzzles all by themselves. When you get really stuck on a crossword, it’s typical to ask nearby friends/family to take a look and give a second opinion, but what about times when you have nobody around to ask? Our web application, Puzzle Party, aims to address this by giving our users a collaborative platform where they can work with their friends/peers in real-time to solve crossword puzzles, enhancing the overall experience.

The domain our project belongs to is best described as “collaborative puzzle-solving applications.” While this domain isn’t entirely novel, we plan on focusing on providing a seamless user experience without requiring our users to purchase/obtain some kind of membership, which is a common barrier that collaborative puzzle-solving applications’ users are forced to jump through.

Our targeted users consist of puzzle enthusiasts, students looking for educational/mental stimulation, casual gamers, and groups of friends/peers/family looking for engaging, interactive activities to enjoy with each other. By catering to a diverse target user-base and providing the potential for expansion into additional puzzle game types, Puzzle Party aims to provide a collaborative solution to the previously mentioned question of “what do you guys want to do?”

## Similar platforms:

The New Yorker has a partner mode for their crossword puzzles, where users can opt into solving the puzzle with one other member. AARP also has a collaborative crossword game that lets their members

play with up to 9 people; however, this version is tailored to an older audience. The previous sites are restricted to those with a subscription or are member only. Planet Crossword by Hovercats is a free online collaborative crossword game that is made for streamers.

## **Limitations:**

Many existing collaborative crossword sites are limited to members only, which we will not require. Free websites that we found have poor user interfaces since components disappear or become misaligned on different window and screen sizes. To address this, our website will adapt to various screen sizes.

## **Requirements**

### **Functional Requirements:**

#### **Joining Rooms:**

- As a user, I would like to be able to create a room for people to join attached to a 6 digit code (5 hours)
- As a user, I would like to be able to join another person's room when I enter the 6 digit code (5 hours)
- As a user, I would like to be able to kick people from my room and/or ban them from my room (6 hours)
- As a user, I would like to be able to set my room to public or private (4 hours)
- As a user, I would like to be able to join a random public room (4 hours)
- As a user, I would like to be able to invite friends I have on my account (4 hours)
- As a user, I would like to be able to see public rooms that my friends are in (6 hours)
- As a user, I would like to be able to exit a room (2 hours)
- As a user, I would like to be able to see who all is in my current room (3 hours)

#### **Chat:**

- As a user, I would like to be able to chat with people in my room (8 hours)
- As a user, I would like to be able to distinguish between people chatting by assigning their chat messages a color (3 hours)
- As a user, I would like to be able to turn on a chat filter (3 hours)
- As a user, I would like to be able to edit the chat filter (2 hours)
- As a user, I would like to be able to adjust the size of the chat box (2 hours)

#### **Puzzle Generation:**

- As a user, I would like to be able to select the size of the puzzle (2 hours)
- As a user, I would like to be able to generate a puzzle using a seed (40 hours)
- As a user, I would like the generator to use a random seed by default unless I specify (2 hours)
- As a user, I would like the option to randomize the seed again with a reroll button (3 hours)

#### **Gameplay:**

- As a user, I would like to be able to see where other player's cursors are at (and mine) on the crossword assorted by color highlighting (5 hours)
- As a user, I would like the whole word (all boxes) to be highlighted in a fainter color than where my cursor is so that I know which direction I am typing (4 hours)

- As a user, I would like to be able to select the color my cursor shows as (3 hours)
- As a user, I would like to be able to interact with the puzzle and type where my cursor is at (2 hours)
- As a user, I would like to see descriptions for each number on the crossword separated by “down” and “across” (2 hours)
- As a user, I would like to be able to select a description to have my cursor moved to that number on the puzzle (3 hours)
- As a user, I would like to be able to change my typing direction by pressing space (down or across) (2 hours)
- As a user, I would like to be able to check my current guesses (4 hours)
- As a user, I would like to be able to receive a hint in the form of an extra letter on my current word (3 hours)
- As a user, I would like to be able to set a timer for any crossword I do (2 hours)
- As a user, I would like to be able to play more game modes than crossword, such as sudoku (If time allows, many hours)

#### **Log-in:**

- As a user, I would like to be able to play as a guest (4 hours)
- As a user, I would like to be able to create an account with my email and a password (6 hours)
- As a user, I would like to be able to save settings, such as my color for highlighting my cursor/current word, timer on/off, and chat filter on/off (4 hours)
- As a user, I would like to be able to set my display name (2 hours)
- As a user, I would like to be able to add friends (3 hours)
- As a user, I would like to be able to check my statistics (6 hours)
- As a user, I would like to be able to customize my avatar (If time allows, 10 hours)

#### **Quality of Life:**

- As a user, I would like to have a landing page with options to create a room, join a room, access my account, and generate a puzzle (10 hours)
- As a user, I would like to be able to click a home button to bring me back to the landing page (6 hours)
- As a user, I would like to be able to access Puzzle Party as a website (given)
- As a user, I would like to be able to play on both my computer and mobile devices (10 hours)
- As a user, I would like to be able to refresh the page and remain in my current room (2 hours)
- As a user, I would like this program to be tested extensively for bugs and flaws so that I receive a polished product (40 hours)
- As a user, I would like a well designed UI that is colorful and pleasing (30 hours)
- As a user, I would like to be able to suggest words/descriptions to be added to the game (If time allows, 14 hours)

### **Non-Functional Requirements:**

#### **Architecture and Frameworks:**

We plan to use NodeJS for server side operations, and we plan to create a RESTful API using NodeJS, plain Javascript, and a framework called Ably to allow for synchronous interactions between multiple

different clients. The front end will be built using React to allow for interactive and responsive design, which will also interact with the server to pull functionality from the API we build. We plan to use MUI (Material UI) to allow for consistency in our page designs.

**Scalability/Response Time:**

We plan to build our application to scale with multiple concurrent users (up to 1000) without a significant decrease in bandwidth by caching re-used assets and building a lightweight website to decrease load. We also plan to implement multithreading to allow for multiple concurrent processes to be running in parallel, increasing the performance and scalability of our program. We also want the program to be very fast, as the whole point is to have synchronous, real-time collaboration with other players, meaning the response time of the program must be extremely streamlined. We would like to have the end product have a response time of 200-300 ms for each player action.

**Usability/UI:**

We plan to have our website be extremely simple to navigate, and structurally similar to pre-existing puzzle-crossword webpages. This should allow for our users to feel comfortable with our product, and allow the additional features to be an added bonus and not a confusion to their interactions. We also plan to have our webpage be responsive and adapt to various screen sizes.