ReadySelectPlay - Requirements Analysis

Jayanth Gangadhar, Matthew Hantsbarger, Parshva Shah

Problem:

Deciding what board game to play at a party can be a hassle. Narrowing down which games can be played while taking into account everyone's preferences can be difficult to do in a timely fashion. Selecting from a huge list of available games can take a long time as people have to stop and explain several games to other players not familiar with them, and trying to negotiate clashing preferences can lead to conflict and indecision.

Our proposed tool is a cooperative application for assisting in deciding what board game to play. The intent is to streamline the process of selecting a game to play, first by providing filters for the group to quickly narrow down the list of games before facilitating a way for individuals to express their preferences on that list to allow the group to come to a satisfactory decision while minimizing conflict.

Previous Work:

Our project is to create a tool that assists in group selection of a board game, so we researched prior work that involved technology-assisted Group Decision Making (GDM). GDM is a wide field and the decision that groups make varies depending on the topic of research. Many papers we found involved group decision making in an office context for example, or for trying to select a correct answer to a problem. Joan Morris DiMicco in a paper titled Designing Interfaces that Influence Group Processes detailed a collaborative tool she developed to balance group conversations around disparate opinions and her observations on that tool's effect in influencing group discussion[1]. Papers such as one by Muesluem Atas et al. on the other hand examine group decision making in terms of cost and risk analysis[2]. Both premises for issues to solve are not closely related to our problem since the correctness of a solution in our problem is not externally defined outside the group, but their examination of group dynamics and negotiation are still relevant to our research.

Cong-Cong Li et al. researched consensus building in GDM and proposed an iterative model for examining the consensus and consistency of a decision[3]. In the same vein, James A.R. Marshall et al. examined in a biological context how collaborative decision making takes into account subjective confidence to in summation provide better decisions than individuals[4]. Many research papers in decision making focus on strategies utilizing fuzzy logic and majority rules. Such an approach may have downsides in our scenarios, since although fuzzy logic strategies make sense in our situation where individuals have non-absolute preferences, individual dissatisfaction may arise from people not in the majority.

With regards to satisfaction, Tatsuya Nakamura et al. specifically investigate how collaborative web searches affects the dynamics of group decision making and found among other conclusions that time spent deciding was not closely linked to the amount of satisfaction with that decision[5]. We intend for our project to minimize time spent on the discussion without adversely affecting the satisfaction of group decisions. In our project consensus will be measured with the group and individual satisfaction; does the group come to a decision that most or all individuals are satisfied with? In our project, the validity of a solution is not externally defined, rather it is dependent on the decisions of the group as a whole compared to the preferences of the individuals.

Users:

- **Primary Users**
  Persona 1: Patty Hosta
  Patty Hosta is a grad student who plays a lot of board games. She has a huge board game collection containing tons of games ranging from all the different categories. She hosts board game nights at her place every Friday and invites all her friends. She usually has a crowd size of at least 10 people who turn up every game night. She enjoys playing the host but hates wasting time on deciding which board game to play since the group is pretty big and most people want to play their favorite games. In case of disagreements, Hosta is expected to choose the game that everyone plays as she is the host. She doesn't like it as her choice might conflict with her close friends' and she is afraid that this might create problems between them.

  Persona 2: Dee Dee Kate
  Dee Dee Kate is a liberal arts major who is a frequent board game player. She is very smart, tactical and her strategies are usually pristine. She is convinced that she is one of the best players if not the best. Her game collection is pretty small and she always emphasizes on only playing those games as she feels it gives her the best chance for winning and she doesn't prefer playing games that she is not good at. She hates losing and she goes into a state of denial whenever she loses.

- **Secondary Users**
  Persona 1: Annie Choice
  Annie Choice is a final year grad student who enjoys people's company. She plays board games occasionally and doesn't take them seriously enough. She mostly comes to the game nights because she loves the company of her friends. She doesn't care which game is being played or who wins. She is not a competitive person and the only reason that she comes to board game nights is to have fun.

- **Tertiary Users**
  The app is aimed at reducing conflicts and time needed to select a board game and in turn, let users play more games and possibly get more people to start playing board games. This could potentially increase the sale of board games and thereby directly affecting the **board game manufacturers.**

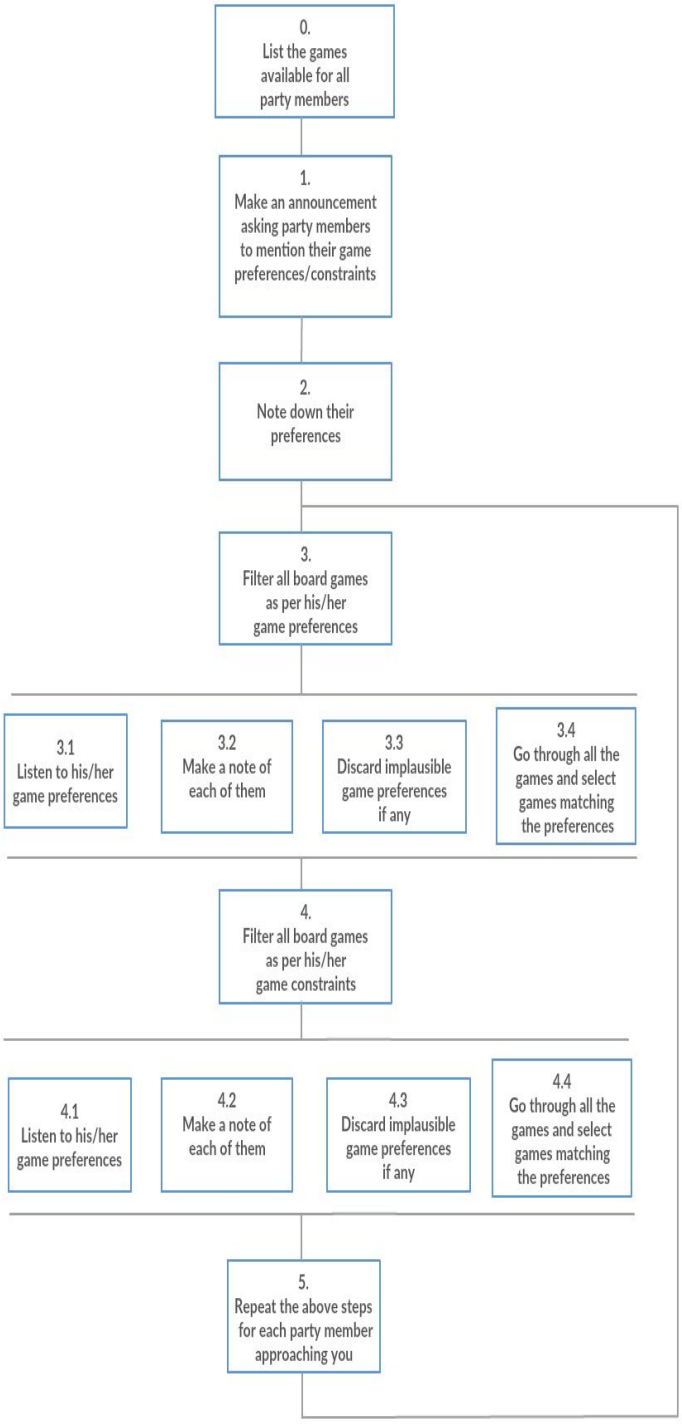
  BoardGameGeek is an online forum for board gaming hobbyists and a games database that holds reviews, images, and videos for over 101,000 different tabletop games. We would be using the BoardGameGeek API to fetch the collection of board games and for all details related to the game. Since we will be using their API often we can help them get more attention and in turn more user traffic to their website

- **Facilitating Users**
  The facilitating users are any **cloud service providers** like AWS that would host our web application.
  We (**Jayanth Gangadhar, Parshva Shah, and Matthew Hantsbarger**) would be responsible for developing and maintaining the application.

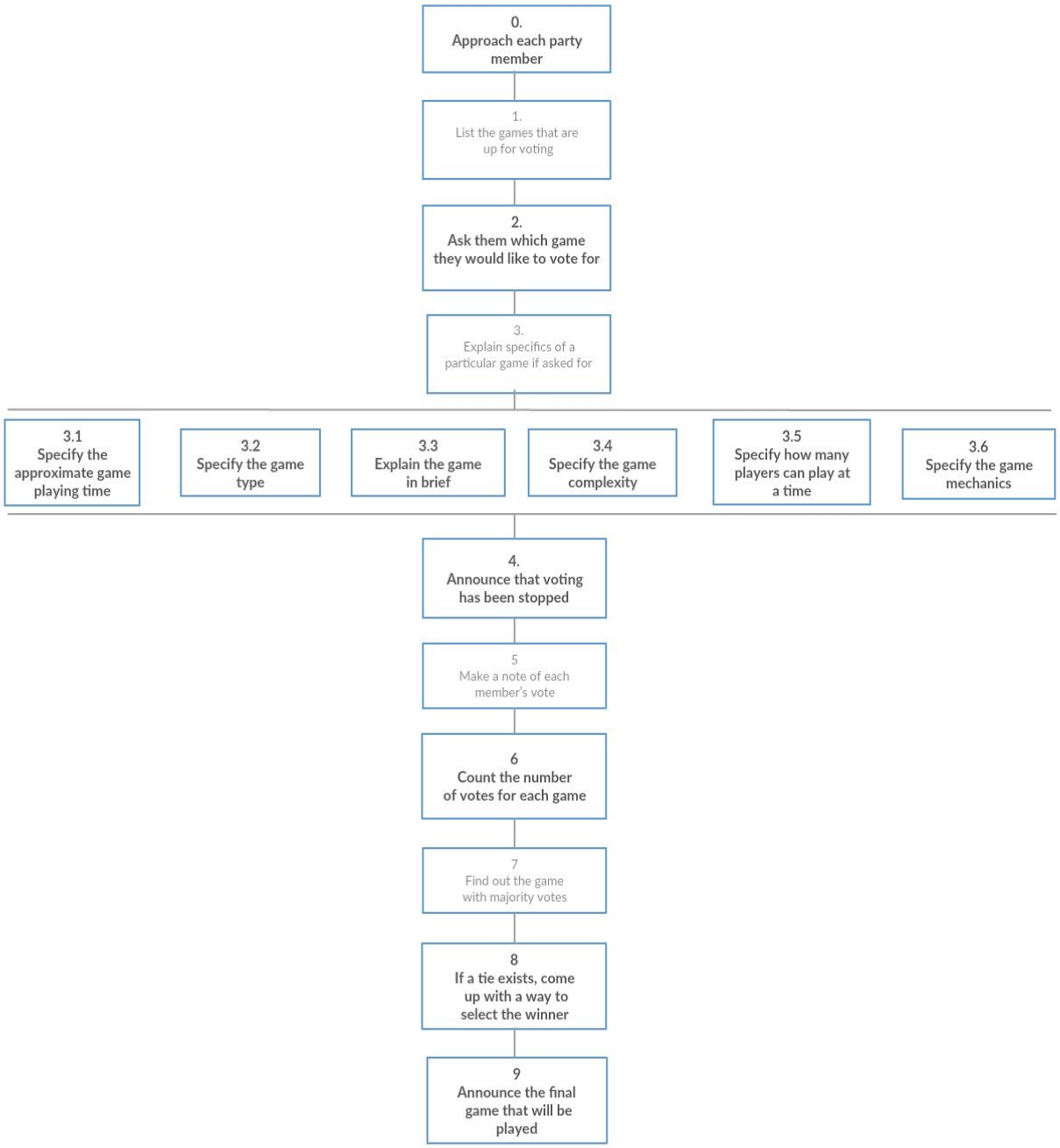
Tasks:

Task 1: Information transfer from party host to the party members about board games present

Task 2: Applying filters/constraints to the games present to narrow down the list of games



Task 3: Group voting to select the game to be played from a list of games



Problem Scenarios:

- **Problem scenario for Task 1:**
  Patty Hosta, the party host, has a huge collection of board games. Even though she has excellent knowledge about all of them, conveying all this information to the party members becomes really difficult. Not only do they ask about which games she has, they ask about what each game is about in detail, how long would it take to play it, how to play, and similar questions answering to each of which takes a very long time. Also, they tend to forget her answers and ask the same questions again which makes her irritated and spoils her party mood. She doesn't like to be an information desk attendant. The thing that she dislikes, even more, is the party time wasted in just delivering the information, all of which might not even be of any use.

- **Problem scenario for Task 2:**
  Patty Hosta explained to everyone which games she has for the night. However, the party members always have their own preferences and constraints. Dee Dee Kate always likes to play strategy card games which include cooperative play and player elimination. Mr. Snobby is always in a hurry and would like to play games which can be completed in 20 minutes maximum. Annie Choice is flexible with all the board games and wants to just get started with playing them as soon as possible without wasting all the time in decision making.

  The variety of users, as well as their preferences and constraints, makes Patty Hosta worried about her ability to filter her collection of board games manually. She not only has to make sure she knows about each and everything about all her games but also has to take into account preferences from all of them without missing out on any specific minute details which in itself is so time-consuming. She asks for help but no one other than herself knows everything about all her board games. She wishes she had someone (something) which knew about all the games too and would help her to automatically take into account all the preferences and apply filters for her.

- **Problem scenario for Task 3:**
  Once all the party members have at least one game of their preferences in the filtered list of games, the final step is to narrow it down to a single game. Problems arise when the means to resolve this conflict causes debates, arguments or fights in the worst case. Voting, i.e. going with a majority seems to be the most plausible option. People would end up voting for the board game of their preference, without even considering other games in the list as they do not have knowledge about them. Also, in a party of over 20 members and say 10 games, it becomes a hassle to keep a track of all the votes. Also, manual voting brings in other problems like taking a vote from a person twice, missing out a person's vote who did vote or handling members who vote for multiple games or who could not decide on which single game to vote for.

Usability Requirements:

We will be measuring two aspects: the time to select a game and individual satisfaction with game selection. In examining the time to select a game we will be comparing time spent deciding with our app to time spent deciding in a scenario without our app, with our hypothesis being that using our tool will decrease that time. With individual satisfaction with the game selection, we want to examine if players reached decisions on games that they were satisfied

with, including if they thought the selection was fair and if they got the chance to play the games they wanted. We can measure this by asking individuals afterward and also examining how often the group goes with the decision our project helps them reach.

Citations:

[1] Joan Morris DiMicco. 2004. Designing interfaces that influence group processes. In *CHI '04 Extended Abstracts on Human Factors in Computing Systems* (CHI EA '04). ACM, New York, NY, USA, 1041-1042. DOI: https://doi.org/10.1145/985921.985969

[2] Muesluem Atas, Stefan Reiterer, Alexander Felfernig, Thi Ngoc Trang Tran, and Martin Stettinger. 2018. Polarization Effects in Group Decisions. In *Adjunct Publication of the 26th Conference on User Modeling, Adaptation and Personalization* (UMAP '18). ACM, New York, NY, USA, 305-310. DOI: https://doi.org/10.1145/3213586.3225242

[3] C. Li, R. M. Rodriguez, L. Martinez, Y. Dong and F. Herrera, "Consensus building with individual consistency control in group decision making," in *IEEE Transactions on Fuzzy Systems*. doi: 10.1109/TFUZZ.2018.2856125, URL: https://ieeexplore.ieee.org/abstract/document/8410802

[4] James A.R. Marshall, Gavin Brown, Andrew N. Radford, Individual Confidence-Weighting and Group Decision-Making, Trends in Ecology & Evolution, Volume 32, Issue 9, 2017, Pages 636-645, ISSN 0169-5347, https://doi.org/10.1016/j.tree.2017.06.004. (http://www.sciencedirect.com/science/article/pii/S0169534717301520)

[5] Tatsuya Nakamura, Tomu Tominaga, Miki Watanabe, Nattapong Thammasan, Kenji Urai, Yutaka Nakamura, Kazufumi Hosoda, Takahiro Hara, and Yoshinori Hijikata. 2017. Investigation on dynamics of group decision making with a collaborative web search. In *Proceedings of the International Conference on Web Intelligence* (WI '17). ACM, New York, NY, USA, 434-441. DOI: https://doi.org/10.1145/3106426.3106505