WaitNoMo by Group PB&J
3I03 Technical Proposal

Summary & Opportunity

PB&J is a start-up software company comprised of McMaster Engineering and Computer Science students. We intend to provide high level technological solutions for current real world problems. This means that we combine our passion and knowledge of software towards any industry that can benefit.

Amusement parks have been a huge attraction for centuries since the first fair opened in 1893 in Chicago [1]. People love to visit them to go on the rides, experience the special events, partake in the games and so much more. It's a great opportunity to spend time with friends and family to create memories that will last a lifetime. However, one aspect of these wonderful places that no one enjoys are the long wait times. Wait times for popular rides can exceed one hour with worst cases being over 5 hours for *Avatar Flight of Passage* in Disney Kingdom, FL which had a verified wait time of 319 minutes [2]. This large amount of time is spent standing in a line instead of visiting other attractions which would benefit both the customer and the amusement park.

This problem is definitely not an unexplored issue as major amusement parks all around the world deal with long queues. Some have "fast pass" ticket add-ons which enable people to pay extra to have access to fast pass only lines which will be much shorter. This is a good way to reduce the waiting time for those buyers but some attractions can still be lengthy and in some cases, and the pass is too expensive for many people.

What if there was a more innovative and affordable way to reduce the amount of time spent waiting in lines?

Solution & Intellectual Property

We present an application that works in partnership with amusement park companies to present a solution to eliminate most of the time wasted standing in long lines.

Users will have access to a mobile application that enables them to reserve their place in line for a selected attraction. This access will be given through PB&J's mobile application or through existing partnering applications such as Disney or Canada's Wonderland. Users will need to pay a subscription fee which will be determined through research during the prototyping phase. This fee will provide a revenue stream for both PB&J and the partner company.

After reserving a ride, the time to wait will be the predicted wait time at the time of reservation or earlier if the queue has emptied earlier than expected. The customers will be notified 10 minutes prior to having their waited time finished through the app. If they don't show up, their reserved spot is invalid. Users will be able to reserve places for a maximum of 2 attractions to ensure fairness and to avoid cluttering at other spots in the park. This limit will be optimized for each client during the research phase.

Considering that most major parks already have "fast passes" to avoid longer wait lines, this service can easily integrate with the existing ticket plans. For example, Wonderland has two lines; regular ticket holders and fast pass holders, and adding a third for WaitNoMo users will not be possible due to costs and management.
Instead, if the wait time for the regular line is 1 hour and the fast pass is 10 minutes, WaitNoMo users will be able to reserve a spot for that ride and after 1 hour has passed, they will be given access to the fast pass line. This allows users to avoid standing in the 1-hour line but will also ensure that higher paying members have an advantage over WaitNoMo users as they have direct access to the attraction.

Our solution is different as there currently isn't anything like this in the market. Some products that will be mentioned further in the report tackle the same problem however they do not address the unique reservation system that we have come up with. Simply stated, the applications in the market display wait times to help the user plan their visit or they provide an expensive add on to avoid longer lines. To avoid being copied, copyright protection or a patent would need to be acquired along with cooperation with amusement park entities. Because software patents are difficult to obtain, further information about maintaining our intellectual property will need to be discussed with a financial advisor or a patent expert early into the prototyping phase.

Market & Competitors

Theme parks in the United States generated a revenue of $18.74 billion USD in 2018 [3]. This number is expected to rise to over $20 billion by 2021. In 2017, the top 25 theme parks in the world alone had 244 million visitors, a year-over-year growth of 4.7% from 2016 [4]. The same year, North America's top 20 parks accounted for over 150 million visitors.

Disney, owner of 8 of the top 10 busiest amusement parks worldwide by attendance rate, attributes much of this growth to the implementation of new digital technology in its rides and attractions [5]. Guests are being engaged by new rides that immerse them in 3-dimensional augmented realities and increase person-to-person interaction between guests. These attractions have enabled guests to have a unique experience every time they visit, encouraging repeat visitors.

The most commonly reported complaint reported by amusement park attendants was the lack of parks' proper handling of this increased traffic, specifically with regards to wait times for rides [2]. Current mobile applications exist for many of America's largest parks including

Disney's "My Disney Experience", Universal Studios Orlando's "Official Universal Orlando Resort App", Cedar Point's Cedar Point Official App, and Hershey's "Hersheypark Official" [5-8]. These applications do not implement an actual reservation system, however, but allow guests to view average wait times of rides around the park.

Development Plan

Our development plan consists of 3 main phases: Prototyping phase, Market Delivery phase, and Maintenance phase.

Prototyping will be necessary to develop the technology and application we intend to implement. This will include a large amount of market research to completely understand the domain of the product to be. Here, the optimal software must be developed before moving onto the next phase to ensure the functional requirements and security protocols are in place. This phase will also contain meetings with financial advisors. This phase is expected to last 2 years.

Next, we will be heading into the Market Delivery phase. Here, we will need to network with potential clients who we aim to work with. Our application/technology relies on the cooperation with amusement parks so this part of the phase is quite important. Furthermore, actual implementation of the application will take place here. Due to the variance and adaptability of WaitNoMo, the client's needs and current line system will be considered when implementing the WaitNoMo system. This phase is expected to last 1 year however can last longer to ensure a reliable and clean implementation of PB&J's system.

Finally, we head into the Maintenance Phase. We believe this needs to be its own phase as each client will have a different implementation of the technology and PB&J will need to ensure their system remains secure, easy to use and reliable. Research gained from the implementation phase will provide data on how to improve the system in place. Another aspect we want to look at is obtaining accurate wait times. Through machine learning and a profitable implementation, an algorithm will be worked on to improve the system in place and even benefit the client park's wait time system.

Financial Plan

In the initial development phase, which we estimate to be 1-3 years, we estimate our expenses to total around $10k/month. Approximately 60% of this will be incurred by overhead software development costs, and 40% by marketing. Marketing will be done mainly via social media outlets (including Facebook, Instagram, Twitter, Email) and direct advertisements (including website advertisements, magazine and newspaper articles). This advertising will be targeted towards two audiences; event hosting companies and event attending individuals.

In this phase, we intend to work with companies that run smaller events such as local carnivals and small fairs. For this phase, we will offer a special cost of only 2% of overall ticket sales (in addition to overhead costs incurred from server hosting, travel, and data usage expenses), with no base pay rate, to encourage testing and development of our framework. Using this number, our one-year target is to provide a service for 2 events per month that combine for a total of 10,000 attendees. After 2 and 3 years we expect to increase this number to 20,000 and 40,000 attendees per month, for a revenue of $16,000 per month by the end of year 3.

During this phase, we intend to optimize our algorithms and create an easy to implement system that appeals to event-holding companies, while continuing marketing through the aforementioned outlets, and adding additional marketing that results via networking in this phase. It is during this phase we intend to obtain patents to our queuing and wait time estimation algorithms.

Following the initial development phase, for years 3-5 we intend to enter the expansion phase target larger companies such as state fairs and small amusement parks. In this phase, we expect our costs to rise variably to approximately $20,000-$50,000 per month. This will account for increases in marketing as well as company expansion. At this point we will begin charging a base cost, variable dependant upon the size of the event, but generally around $1 per expected event attendee, to ensure any potential losses (due to inclement weather or other unforeseen events). In this phase we will also increase our fee to 5% of total ticket sales. Our target number of attendees will then increase to approximately 100,000-200,000 per month, thus increasing our revenue to $200,000-400,000 per month.

Years 5+ will continue the same pattern as the development and expansion phases, with target partnership companies this phase being the large amusement park companies such as Disney and Universal Studios. Costs will remain relatively steady and fluctuate to remain competitive while maximizing profit margins.

Team

Our team consists of Tasin Ahmed, Saad Ali, Brandon Michael, and Kunyuan Cao. All of us have the problem-solving and analytical skills necessary to create an application. We believe we understand the mindset of both mobile app users and theme park attendants. Most importantly, we share a common passion for design, and improving the user experience

Conclusion

Our overall goal for our app is to allow users to reduce their wait times in lines at amusement parks by a significant amount. We will cooperate with different amusement parks to allow users to choose a one day, or one-year subscription of WaitNoMo. The app will allow the user to reserve a spot in a line. It will notify the user when it is their turn to enter the ride or

attraction. The app must be thoroughly tested for bugs to ensure that the users will have a comfortable experience.

Sources

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