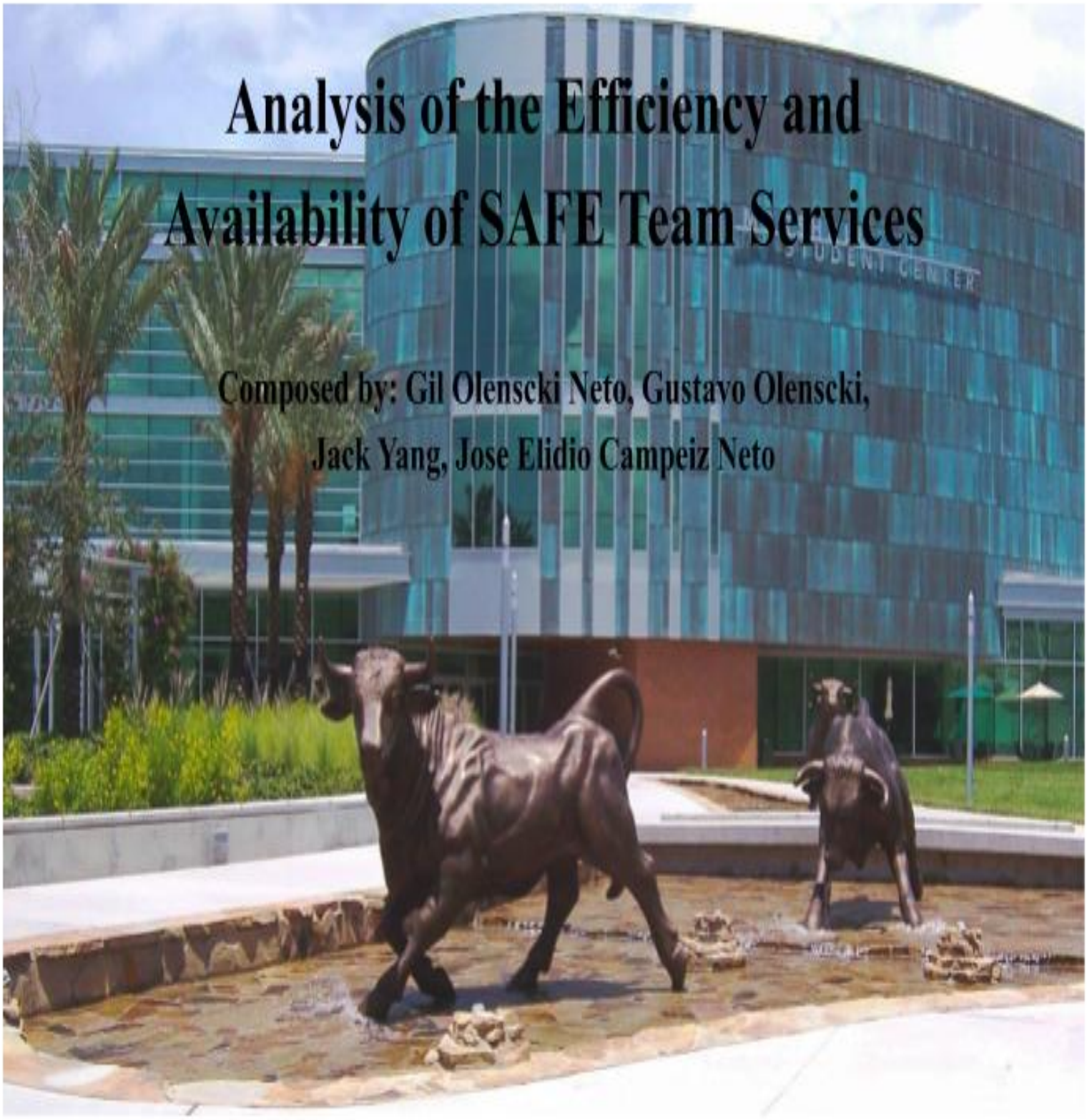


Analysis of the Efficiency and Availability of SAFE Team Services

Composed by: Gil Olenscki Neto, Gustavo Olenscki, Jack Yang, Jose Elidio Campeiz Neto

Table of contents

Abstract……..……..3
Introduction……...……...3
Context/Background Information
Purpose statement and top-down strategy
Problem/Need……..……....3
Explanation of the problem…….…....4
Causes of the problem…….….4
Solution
Details of the solution……..5
Benefits of the solution……....5
Ways in which the solution satisfies the decision criteria……...……....6
Implementation
Schedule for implementing the solution……..6
Budget……..6
Conclusion……...7
References……...7

Abstract

Campus safety is a top priority at USF, the university provides a variety of campus resources that were designed to assure the safety of students, staff, faculty, and visitors. One of these resources is the SAFE Team service, which has the purpose of providing safe transportation to USF students and staff. According observable research data, the service does a great job in increasing campus safety, but Even though the service is

Introduction

Context/Background Information

Choosing a post-secondary institution is a major life decision for students and their families. Along with academic, financial and geographic considerations, the commitment of the institution towards campus safety is most definitely one of the top priorities for many incoming students.

Among the different campus resources designed to improve campus security and fight crime, the S.A.F.E. Team is a service provided by the conjoint effort of USF University Police and Student Government. It provides safe transportation to USF students and faculty, and constantly patrols the university campus to prevent crimes and improve the overall safety on campus. The SAFE Team Escort service consists of a golf cart or walking team of two ground field staff accompanying a number (usually one or two) of USF students, faculty or staff, from one location on the USF campus to another and is available from 6:30 pm to 2:30 am every day. To use SAFE Team services, students have to call the SAFE Team center, wait for a dispatcher to answer their call, inform their name, number of people, current location and destination. After getting assigned an estimated waiting time, the student waits for their ride at their respective locations.

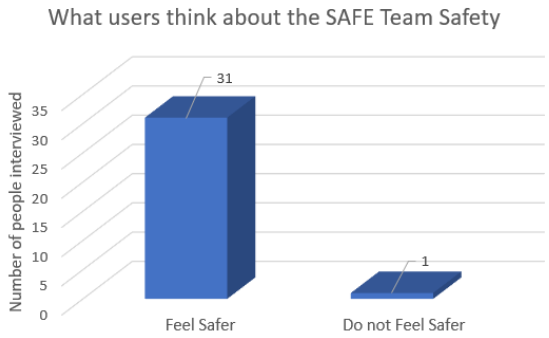


Figure 1: User opinion regarding how safe they feel when using the SAFE Team services.

Purpose statement and top-down strategy

The main purpose of developing the app is to improve the SAFE Team service by transferring the current operation to an app. First, it is important to get the most information possible from its service such as the average number of staff, users and calls from each day. Taking that into consideration, it is possible to know how much it will be necessary to invest yearly in maintaining its services in order to attend the purposes with great quality. Additional research regarding app development is also important in order to know the time and cost necessary for its creation. Moreover, after being knowledgeable of all the costs of the SAFE Team services, is necessary to optimize it by ensuring that the app design is pleasing and is constantly being updated to remove bugs to guarantee its quality while operating.

Problem/Need

According to the information provided by the SAFE Team's official website and research data acquired through interviews and surveys done with frequent users of the service, the high volumes of calls during weekends and busy hours makes it impossible for the

current scheduling system to keep up and consequently the waiting time rises very quickly.

According to their Website, the escort service has an average of 8-10 field teams and one call dispatcher working per night. Although the average student escort takes only about 10-15 minutes and they receive an average of 100 calls per night, during busier times, such as midterm and final week, that number easily exceeds 150 calls.

From the data provided by the same source, the main user experience problems related to SAFE Team escort service include: the escorts exceeding the expected waiting time and the student not knowing whether their ride is just late or whether it has been canceled (USF SAFE Team official Website).

In addition, having to rely on the call center to know the status of the service and inconsistencies caused by flaws in the current operations is also detrimental to the experience of many students. According to an interview of a student that frequently uses the service, "You just can't rely on their availability! I've had to wait 15 minutes in line just to find out it would take another 45 minutes for a SAFE team to pick me up. However, sometimes I wait about the same amount and there is a SAFE team available in 5 minutes. I feel like if I could somehow schedule their service in advance or easily know how busy they are in a given night would really benefit my experience with their service." (Silva).

Furthermore, a research survey conducted with 32 USF students that frequently use the SAFE Team escort service (3 or more times a week) showed that relying on the estimated waiting times and the current call center scheduling system is not a good experience for most. More specifically, 29 out of the 32 students surveyed claim to frequently experience problems related to inaccurate waiting times, inefficient scheduling process or overall availability of the service, which clearly show the need for improvement in SAFE Team's user experience can be improved.

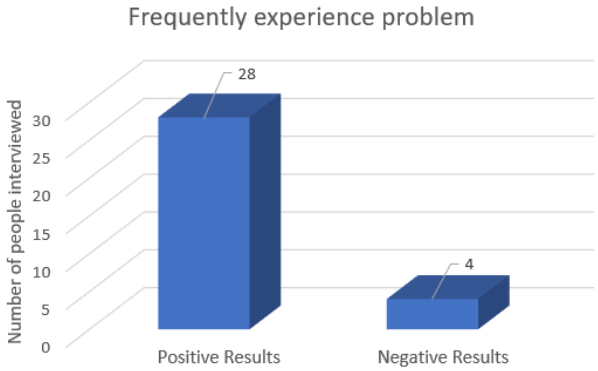


Figure 2: Graph depicting the number of people that did or did not have issues with the SAFE Team in a survey

Causes of the problem

From the information depicted in the SAFE team Website, and an interview conducted with a SAFE Team Escort Driver which confirmed the initial assumptions and the information on the website. The main causes to the aforementioned problems were traced back to three common factors: the ration between call dispatchers, ground teams and average phone calls per night, the users having to rely on the single call dispatcher to monitor the availability of the service, and finally, the lack of a reliable communication system between the user and the escort team after the initial call.

The fact that there is only one call dispatcher per night, responsible for solely scheduling rides, handling all the 150 average calls and coordinating all 8-10 escort teams, is clearly the biggest contributor to the problems related to the fast-growing waiting times during busy times.

Since the users have no way of knowing the current status and availability of the service, unless they call the dispatcher. The lack of a

system that monitors the availability of the service further increases the responsibilities of the single call dispatcher, which increases the overall waiting time and consequently deteriorate the user experience.
In addition, the fact that the students can't communicate with their respective escort teams before they arrive (again, unless they call the dispatcher) contributes to the unreliability of the SAFE Team service. The ambiguities of the scheduling system are responsible for problems related to miscommunication, such as students waiting long times for rides that were canceled or SAFE Team escorts waiting for students that don't show up.

Solution

Details of the solution

In order to deal with the problem described and its complications to the user experience and efficiency of SAFE Team service, the solution encountered was to build a smartphone app. The proposed app will be a technology platform that improves the connectivity between the users and escort teams, by providing an automated scheduling system. The main features included in the app's MVP (Minimum Viable Product) will be an automated service request system supporting multiple pickup locations throughout the USF Campus, display of a more accurate estimation of scheduling time, and tracking the current status and position of on-going rides.

Benefits of the solution

With such an idea, the user will be able to request a ride by simply accessing the app and making a request. It would avoid the user's need to rely on the call dispatcher to check if there are any available drivers or how many requests are before the call. Then give the response to the user about the time that will take the SAFE Team's driver to arrive. Furthermore, the app can show the estimated time for the driver`s arrival, which would solve the problem of miscommunication between driver and user. It would also improve the driver's experience by displaying a map of all the current drivers, so if there is a new ride request the driver will know that the nearest one should take it.

Ways in which the solution satisfies the decision criteria

The solution proposed satisfies the decision-making criteria because of its fast and low-cost implementation. According to the website Buildfire, if you just need to build something basic, you can get it done for a few thousand dollars. In addition to that, they also state that it is really easy to develop since there is not much to it. They posited that when developing the code "you've just got to write the basic programs for the functions to work and that's really it" (Buildfire, 2019).

Implementation

Process of Developing and Implementing an App using Agile Methodology

A process known as the Agile Development Cycle is fundamental for software related projects, as it will be used in the project in question. The reason why the Agile Development Cycle is seen as a very viable approach is mainly because it is a clear process that allows the enterprise to easily manage a certain project. It includes not only the step by step of the development but also the monitoring of ongoing projects. Agile software development is closely related to the idea of iterative development

that enables a group of people to quickly deliver results with greater quality, predictability and the option to promptly respond to changes (Kreiseler Ng).

The whole course of developing a web or mobile application is based on a constant and extensive research process in order to always have the feedback necessary to improve your project. In other words, tracking & monitoring your activities.

The Agile methodology is based on mainly on any number of iterations, and in this there will be four: user experience design, user interface design, development and deployment.

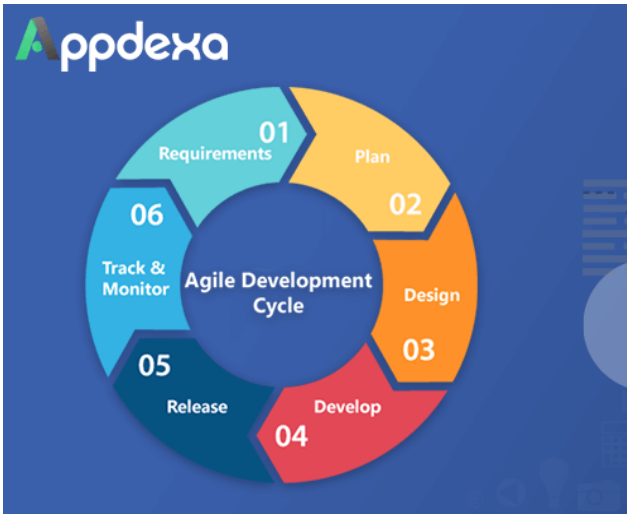


Figure 3 (2017). Agile Development Methodology Flow Chart. Retrieved from Why Choosing Agile Methodology Matters For Mobile App Development Practice

The process of implementing this program at the University of South Florida will start with a market research to better understand the need for this mobile application on campus. When talking about monetization, it is important to remember that the transition from a dispatcher system to a mobile app similar to Uber may pose a high cost of investment, but it will forgo the need for non-crew positions. Also, it will certainly make the service of S.A.F.E. Team much more effective, increasing the number of rides and making a greater number of students safe.

The Agile Development Cycle is proven to be a very effective method when working in a software related project, and it is in fact very much applicable for the project in question. Since this program is going to be offered with no charges to USF students and faculty, it is important to minimize the costs as much as possible, and it is possible to do so with the fast feedback system offered by the Agile.

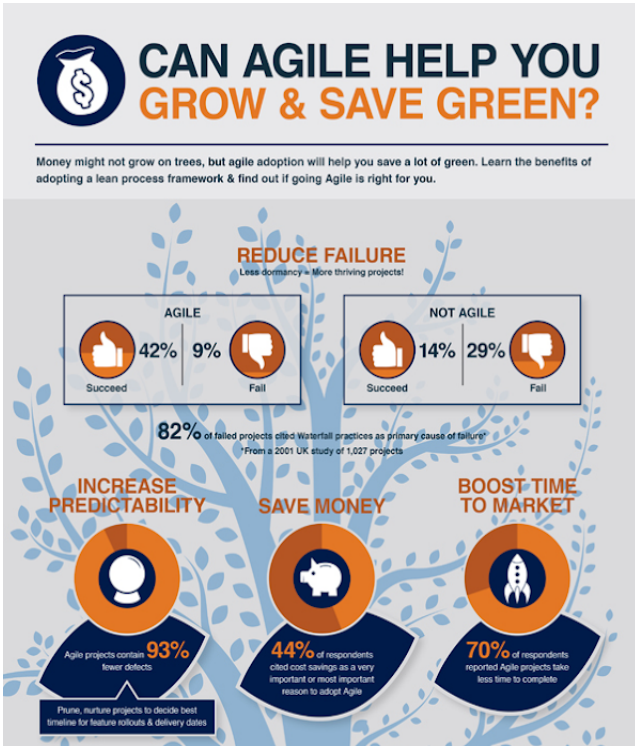


Figure 4: What is Agile? https://www.cprime.com/resources/what-is-agile-what-is-scrum/

Functionality of the Escort and User App

There will be 2 apps, one for the students using the service and the other one for the drivers. The drivers will be prompted their USF ID or code in order to login to their driver profile. The user app allows the user to remain anonymous but they can also create a profile.

Escort

The escort's version of the app allows the escort to access a map with the current location and availability of all escort in addition to the location of the users requesting the service. This will be implemented by augmenting a mapping API such as Google Earth, which will handle all the localization and path planning functionality.

Users

The user version of the app will allow the user to request a safe team, know how long it will take for the safe team to arrive and how long the trip will take. The user will also be able to access the map to check the current location of the safe team assigned for pick up as well as select the location of pickup.

Steps of Implementation:

User experience design

The first step of the implementation process will be to design the application's user-experience. The user app will have 2 main features which consists of requesting a safe team and checking the service availability. For the escort app the menu will also consist of 2 features, contacting other drivers, and checking the user's location after accepting a ride. When the request button is selected, the user then have to select how many people will use the service, and then he will be assigned a driver with their location and expected arrival time.

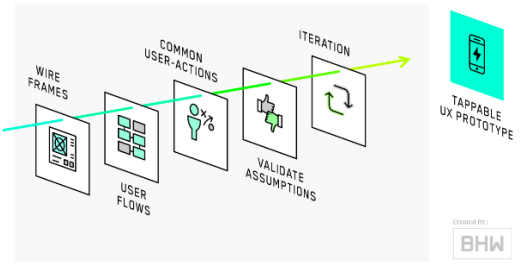


Figure 5:

User-interface design

When discussing the user-interface design of a software application, either web application or mobile application, it is important to understand your audience. In other words, the users of your app. Dealing with the web design relates very much with front-ended software development, which concerns what the user will primarily interact with. So, an intelligent front-end development would make the app visually pleasant and easy to use with visual elements that do not increase the app memory usage in a significant way.

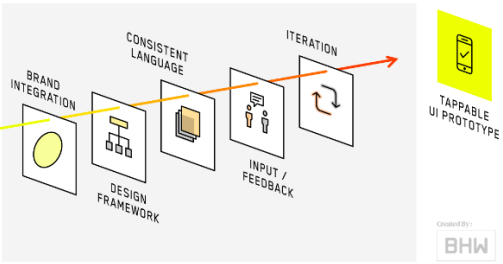


Figure 6:

The third step will be the software development phase, in which the development team will begin implementing the styles and functionality of the app. To implement the map and localization system will use a premade Application Programming Interface (API) that supports different GPS features. It is not necessary to choose a company that offers the API, but it is much more useful since you can take advantage of the development environment that is available when working on an already existing frameworks.

Moreover, in order to assure quality of the product most testing will be performed by non-developers or at least people who are not on the primary development team, in order to ensure a more genuine testing experience. There are several types of testing that should occur during each sprint such as Functional, Usability and Performance Testing

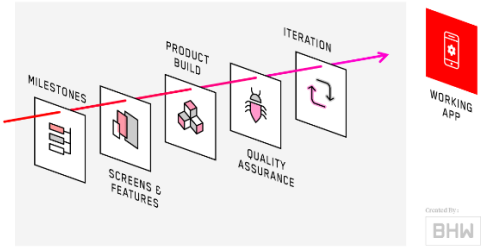


Figure 7:

Deployment

The first step in the Deployment phase involves deploying your web server (API) into a production environment that is robust and scalable. The second is deploying your app to the Google Play Store and Apple App Store. Another aspect that is extremely important is the management of the server where the app is running, which involves a very detailed server back-end to function.

After, it importing to stores is another important of reaching the users of your application.

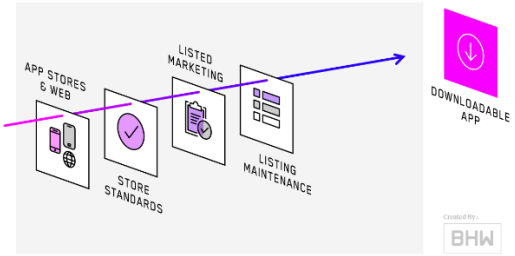


Figure 8:

Budget

The development of apps with features similar to the ones that will be implemented in this app is estimated to cost around $10,000 dollars according to Google app development analysts. However, our team is implementing it for free, the only cost will occur when maintaining the app. Since SAFE team services receive around 150 calls daily it is expected that this is the public that will be using the app daily. Taking that into consideration, with such number of users, the yearly cost of maintaining the app is 20% of the amount spent in the development phase according to Tyler Moore, member of the app press, a group of developers that help programers get started with their own app or other software.

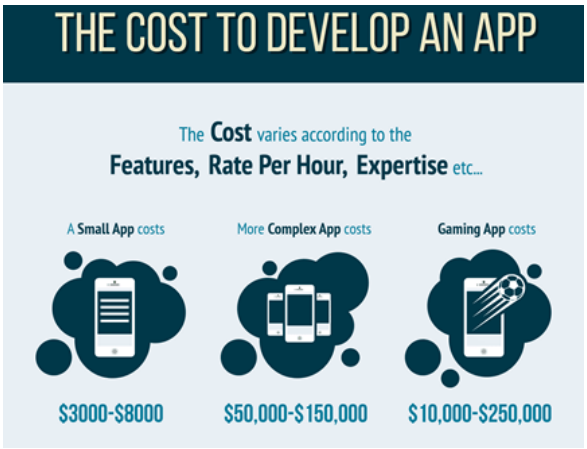


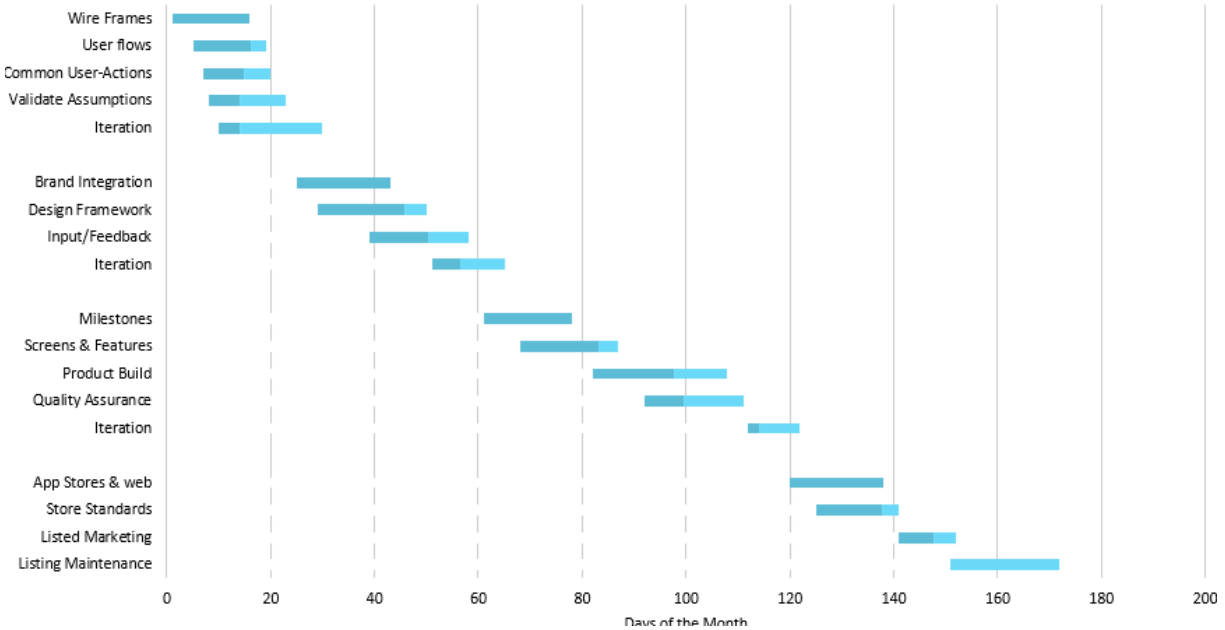
Figure 9:

Conclusion

Providing a reliable transportation service and a secure campus to USF's increasing faculty staff and student body is most definitely one of the biggest challenges for the university administration. Improvements to services such as the SAFE Team, can have a significant impact to USF members that rely on such services to transit from one place to another on campus.

It can be concluded that the USF SAFE Team service is already very successful in its main goal of improving the campus safety. Nevertheless, by implementing an innovative automated scheduling system in the form of a mobile app, we can highly improve its efficiency, accessibility and reliability to end users, and scale its impact to meet all of USF's demand, improving the overall campus safety and student life.

All iterations will follow Gant chart below:



Figure

References

App Development Costs: $1,000 App vs. $10,000 App vs $100,000 App (What's The Difference?). (2019, July 26). Retrieved November 25, 2019, from https://buildfire.com/app-development-costs-difference/.

GitHub. (2019). 9.1: Adding a Google Map to your app. Retrieved 25, 2019, from https://google-developer-training.github.io/android-developer-advanced-course-practicals/unit-4-add-geo-features-to-your-apps/lesson-9-mapping/9-1-p-add-a-google-map-to-your-app/9-1-p-add-a-google-map-to-your-app.html#chapterstart.

Janet. (2017, August 22). Why Choosing Agile Methodology Matters For Mobile App Development Practice - 18697. Retrieved November 25, 2019, from https://www.mytechlogy.com/IT-blogs/18697/why-choosing-agile-methodology-matters-for-mobile-app-development-practice/#.XdyGmuhKhPY.

Mobile App Development Process - An In-depth Overview. (2017, June 5). Retrieved from https://thebhwgroup.com/blog/mobile-app-development-process.

Moore, T. (2019). What's the Cost to Maintain an App? - App Press. Retrieved December 4, 2019, from https://www.app-press.com/blog/whats-the-cost-to-maintain-an-app.

Silva, Amanda, Person Interview, 10/25/2019

University of South Florida. “SAFE Team Services.” SAFE Team, https://www.usf.edu/student-affairs/student-government/services/safe-team.aspx.

Kreiseler Ng, What is AGILE? - What is SCRUM? - Agile FAQ's. (n.d.). Retrieved December 4, 2019, from https://www.cprime.com/resources/what-is-agile-what-is-scrum/.