Project Charter

Austin John - EHRD 477

UIN: 628006155

Project Name

College Station & Bryan Commuter Application

Sponsors

- Mayor of College Station – John Nichols
- Mayor of Bryan – Bobby Gutierrez
- Executive Director of Transportation Services, Texas A&M University – Debbie Lollar
- College Station Transportation Planning Regional Partners
    - Bryan College Station Metropolitan Planning Organization
    - Brazos Transit District
    - Brazos County

Client

Tax-paying residents of College Station and Bryan will be the primary clients requesting this project, as they are the direct beneficiaries from this.

Project Team

The following project will require skilled professionals from several backgrounds and industries to ensure efficiency and completion. This list provides an accurate representation of project team members required, but is not limited to this as additional professional may be required:

- Project Manager
- College Station Transportation Liaison Officer
- Bryan Transportation Liaison Officer
- Texas A&M University Liaison Officer
- Local Law Enforcement Liaison Officer
- Front-End Developers (2 minimum)
- Back-End Developers (2 minimum)
- Systems Administrator
- Quality Assurance Director
- 3rd Party ERP or Database Representative

Start Date

January 1st, 2023

End Date

January 1st, 2024

Problem Statement

Commute times within College Station/Bryan have soared because of an exponentially growing student body using city roads not designed for heavy traffic flow.

Project Description

The following is a city-wide project for the City of College Station and Bryan to undertake over the next 1-2 years. The project will consist of the development of a phone application which will have the capability to relay a wide variety of information regarding traffic and road congestion in real time. This information being widespread amongst residents should allow for better planning short or long trips throughout Brazos County. The project will also require the development of an artificial intelligence program to monitor, compile, and analyze traffic data in real time from both cities, and then provide and ETA with different routes. Additionally, it will require the development of a database for traffic information to be stored on for the application to access. The result of this project will be a mobile application which provides the estimated times of arrival from your current location to any 5 locations that you preset within College Station/Bryan.

The project will be funded by County and State revenue from taxes, as the result of the project will be a public service. This project will require several types of skilled individuals: front end developers, back-end developers, system administrators, software engineers, local law enforcement, Public Works Department liaison (to work with city officials to securely establish link to obtain real time traffic data from stoplights) and may require additional services from third parties to successfully complete.

This project should be completed within 1-2 years of its initiation. The first 6 months of the project will be used to create databases and to establish links between the app, database, and incoming traffic data. The next year will be the longest part of the project, which will cover the development of the algorithm used to manipulate the traffic data the database stores from the city. Upon completion of that, the last 6 months of the project will be used to simultaneously tweak/configure the user interface of the application while testing the application with test groups consisting of residents.

The overall cost-benefit will be realized over time: less traffic will lead to less environmental pollution and travel time, which will increase quality of life for residents. Upon completion, a fully functional application will be developed, and hopefully, a better-informed public body will allow for smoother travel and less congestion within College Station and Bryan.

Goals/Objectives

The goal of this project is to reduce commute times for residents of the Bryan/College Station area by 15%. To measure the success of this project, commute times before and after application launch will be compared. This goal will be achieved by developing and creating a mobile application over the next year which will draw from real time traffic data to give its users an estimated time of arrival to any 5 preset locations. This goal should be completed with 1 year of its initiation but may deviate +/- 6 months as local laws and city budgets will need to be approved for the funding of this project.

Requirements

The following are requirements for the project:

- The application must be operable on Android/iOS smartphones
- UI must be easy to use
- All routes provided to users must follow local traffic law
- Warehouse that stores server must be run on renewable energy, for environmental safety and quality future urban planning.
- The application must be able to handle the same number of users as 75% of the cumulative cities and university population.

Deliverables

The deliverable item for this project is a mobile application that will provide users with estimated times of arrival from their current location to preset locations, using real time local traffic data from traffic lights/cameras.

Project Scope

Upon completion of this project, there are several guidelines/criteria to reflect on to determine status of completion, along with several deliverables that can be used to verify project completion. The goal of this project is to cut down traffic congestion in College Station, through the development of an application which utilizes real time traffic data to provide ETAs to locations around the town. The project should be accepted as a success upon several criteria being met average travel time from campus to set location is reduced by at least 15%, Average annual CO2 emissions see a gradual decline, and the application is fully functional. The deliverable of this project would be the application itself, which will be the main tool used to reduce traffic congestion.

Out of Scope

This project primarily applies to the residents of College Station and Bryan. Although in the future, it may be spread to cover all of Brazos County, obtaining the right permissions from these 2 target cities and creating the application should be the primary emphasis.

Constraints

There are some potential constraints of this project:

- Additional Front-End and Back-End developers should be hired, as the 4 listed in the project member section is the minimum, and more developers will allow for a more efficient process.
- The database that will be used to store real time traffic data and relay that to the application, is entirely dependent on the cities budget that is allocated this project. A larger budget would allow for a faster and more secure database, opposed to a smaller, slower, but cheaper alternative.
- Obtaining the right permissions and establishing secure channels of access to real time traffic data will be the primary constraint, as approval from both cities will be required before any sort of application development may begin.
- A lack of front-end testing to determine the ease of use for the application

Assumptions

Assumptions made during the project include the following:

- Commuters prefer to travel independently rather than use public transportation services.
- Commuters take the same route to their destination regardless of traffic
- Commuters have access to a mobile smartphone, operating either Apple or Android OS.

Systems Affected

The current traffic systems in place will be affected from this project. Given that our project will reduce traffic and congestion, there will be less need for traffic management personnel, which may result in them being let go. Additionally, rideshare/taxi drivers may be affected by getting less business, as less traffic may lead to more individuals driving their own vehicles. Lastly, this project may result in the city hiring

IT professionals to manage the servers and deal with any troubleshooting issues for the application that may arise in the future.

Risks

There are several potential risks that may be encountered throughout this project, the following are categories in which these risks may fall under: time, cost, quality, communication, and procurement management. In terms of time, if the milestones are not met on schedule, the entire project may get delayed as the milestones of the project build upon each other: the next task may not be started until the previous one has been successfully tested and completed. In terms of costs, a time delay will add onto the costs of the project, as extending the timeline will require project team members to work additional hours to maintain the schedule. In terms of quality and communication, the communication platform established in the project charter must be used for all relevant project information, if another medium is used there may be a potential loss of data and may derail the project. Lastly, in terms of procurement management, the obvious risk would be not hiring the properly skilled software engineers to develop the application. Given that there are numerous methods to developing an application, and hundreds of different EMS systems that may be used, it is crucial to identify exactly what type of engineers that are needed and to successfully hire them in time.

Required Resources

This project will require several resources, most of them being technology based. The resources required for the completion of this project are:

- Bryan/College Station City Budget Approval
- ERP or Database Software
- Warehouse or storage facility
- Hardware for server construction
- Unix Systems Administrators
- Software Engineers
    - Front End Developers
    - Back End Developers
    - Test Engineers
    - IT Engineers
- Traffic Control Center Direct Channel Access
- Texas A&M Student Enrollment Information (how many students are expected to bring/use their cars throughout the academic year)
- Liaison Officers to relay progress to governing bodies, and to establish channels of communication and access.

Stakeholders

The following are stakeholders of this project:

- Residents of College Station
- Residents of Bryan
- Texas A&M University Students

- Project Team
- TEXAS A&M Transportation Department
- Brazos County Transport
- Bryan College Station Metropolitan Planning Organization

Summary Milestone Schedule

1. Milestone 1
    a. Propose project and receive city approval and allocation of funds
    b. Target Date: January 31st, 2023
2. Milestone 2
    a. Create new budgeting plan with allocated funds, identifying all hardware and software resources that will be needed, and all necessary IT professionals
    b. Target Date: February 15th, 2023
3. Milestone 3
    a. Build/purchase warehouse and server components to house database
    b. Target Date: March 15th, 2023
4. Milestone 4
    a. Establish link between Traffic Control Center and populate database with real time data
    b. Target Date: June 15th, 2023
5. Milestone 5
    a. Develop artificial intelligence/algorithm to analyze incoming data.
    b. Target Date: August 15th, 2023
6. Milestone 6
    a. Develop mobile application which pulls data from database based on user input
    b. Target Date: November 1st, 2023
7. Milestone 7
    a. Final Application delivered after passing group testing
    b. Target Date: January 1st, 2024

Summary Budget

The following is a summary budget. Costs may increase/decrease depending upon pricing received by 3rd parties.

1. Hardware/Physical Supplies/Warehouse (5,000 sq. ft minimum @ $700 per sq. ft)
    $3,500,000
2. Labor – Software Engineers (6 minimum @ $120,000 annual)
    $720,000
3. Labor – Liaisons (3 minimum @ $77,247 annual)
    $231741
4. Labor – Project Manager (1 @ $130,000)
    $130,000
5. Labor – Group Testing (service by 3rd party for $58,999)
    $58,999

Total Expected Cost: **$4,640,740.00**

Project Charter Acceptance

Team Member Name: TBD

Team Member Title: Project Manager

Date: January 1st, 2023

Team Member Name: TBD

Team Member Title: College Station Transportation Liaison Officer

Date: January 1st, 2023

Team Member Name: TBD

Team Member Title: Bryan Transportation Liaison Officer

Date: January 1st, 2023

Team Member Name: TBD

Team Member Title: Texas A&M Transportation Liaison Officer

Date: January 1st, 2023