Trolley Tracker Proposal

Place: Mayaguez, PR.
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Project Partners

1. Student Software Development Team
2. UPR - Mayagüez Campus
3. Mayaguez City Council

Team

Developers:

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Current Situation

The current situation is buses have a route they follow along the university's campus. There are 9 bus stops across the university campus for users to wait in. Bus routes are displayed at most bus stops for users to familiarize themselves with and plan their routes accordingly. No bus schedule or waiting times are available.

Due to changing traffic and road conditions the trolleys do not stop consistent times throughout the week. Potential users are forced to wait for a trolley that traverses the route and may come much later than they need. Because users cannot accurately gauge if they can use the trolley service to transport themselves, they are not using the trolley service as often as they could.This results in wasting university resources and wasting the user's time-budget when they attempt to use the service.

Needs

Making use of the trolley system, users have a need to know real time positionings of trolleys and estimates of their arrival. Routes and schedules are properly established, but delays are often encountered by the drivers, rendering fixed schedules inaccurate. The system as is would require a more accurate way of predicting a trolley's arrival, allowing more widespread use.

Ideas

The main idea is to connect the trolley to the users of the trolley transportation system. Hardware will need to be used to track a trolley's real time position. Specialized devices with GPS's connectivity, or even a driver's phone may be used to supply this real time data if many students agree to use the app. This data would be sent to a server that would calculate an estimated time of arrival to its next destination.

Using already existing services such as Google Maps, it is possible to integrate this feature without much development. Finally, in order for users to view this real-time information, a mobile smartphone Application can be developed that would query the relevant data from the server and display on their smartphones.

Concepts and Facilities

1. Entities:
    a. Users
    b. Map
    c. Bus
2. Functions:
    a. The Mobile App provides the exact location of a bus.
    b. The user can see the estimated location, time, and route of the user's location.
    c. The user can see the nearest buses available at their exact location.
3. Events:
    a. Trolley Routes – Show the route of the buses available or selected trolley.
    b. Estimated time – Show the estimated time of the bus the user is tracking.
    c. Nearest buses - Show the exact nearest buses available for the user's location.
4. Behaviours
    a. The mobile app shows the routes of all the trolleys available or the selected one.

b. The mobile app shows the exact number and identification of all the buses are available nearest to the user's location.
c. The mobile app provides the user an estimated time of the trolley to arrive at the user's location.

Scope

The scope of this proposal encompasses trolley transportation within university campus and surrounding areas.

1. The scope
   a. Develop App in popular smartphone devices.
   b. Encourage new students to use the app, and existing users to adapt to the new requirements for bus transportation.
   c. Improve bus time and bus route, at the moment cannot give an accurate estimation on improvement.
   d. The cost of this application is:..............
   e. The deadline of this project

Span

Even if the users are provided waiting stations, there is a need to estimate bus locations and remaining time. User value lies in the facilitation of logistics within bus stops/availability.

Assumptions and Dependencies

Assumptions:
1. End-Users will use our apps
2. End-Users will modify their existing behavior to fit our models of consumptions.
3. Trolley drivers(?) will be willing to be tracked using the app.
4. End-Users will be able to use the application without much instruction.

Dependencies:

1.

Implicit /Derivative Goals

1. Distribution of this application should result in a finer initial perception of the university towards freshman.
2. By removing from a user the worry of not knowing the estimated bus time arrival, there can be an increase in student mental health.
3. When having an estimated time for a bus' arrival, a student can accomodate or reallocate their time budget without interruptions.

Standards Compliance

1. Apple iOS Store's App Review Guidelines (https://developer.apple.com/app-store/review/guidelines/)
2. Google Play Store's Launch Checklist (https://developer.android.com/distribute/best-practices/launch/launch-checklist)

Contracts
The project contracts at the moments are not developed,

Synopsis

The project consists of developing an application that facilitates the current Trolley transportation system   at the University of Puerto Rico, Mayaguez Campus. As mentioned in the scope, the current system causes a gap of continually fluctuating time. User's are met with this variability and are forced to partition indispensable time to make a decision. With this application the route infrastructure and budget deviances can be accounted for with the data produced by the tracking functionality as well as users would be able to track on-duty trolleys, potentially decreasing the fluctuation of their arbitrary time through time estimates and potential alternative stops.

1. Domain: In-Campus Transportation
2. Domain Entities: Trolley terminal, trolley, routes, seats.

3. Domain Functions: seat availability, route availability, time estimations with the given station, seat reservation.
4. Domain Events: Trolley receives the reservation, passenger receives confirmation/receipt, passenger receives bus location, passenger receives available routes, passenger receives time remaining estimate for trolley arrival.
5. Domain Behavior: check available seats, routes, trolleys, provide time estimates/remaining, locate nearest trolleys