Project Management Plan

For: The University of Texas at Dallas

Project: Campus Parking Availability App

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**Business Landscape**

**Overview**The Campus Parking Availability App is a service application provided to the students and faculty of the University of Texas at Dallas. KLY Inc. will undergo development of this application and deliver the final product to the University of Texas at Dallas.

This application is mainly suited to help students and faculty locate available parking on campus. The project comes with two main sections: the application software and the gate hardware.

The application software will be responsible for showing users how many available parking spots remain at each parking lot as well as the breakdown of the parking space coloring. The application will use data gathered from the gate hardware to accurately display the availability of each parking lot.

Gate hardware includes the frames and sensors required to accurately detect when a vehicle has entered a parking lot. This hardware is responsible for sending data to a host computer system where it is then relayed to the application. The hardware ensures that both cars entering and exiting a parking lot are accounted for.

**Business Value**

This project will provide its deliverables in phases. Each phase, as represented by what phase the project is currently on, will bring value to the project. A breakdown is provided.

|  |  |
| --- | --- |
| **Phase** | **Estimated Business Value (USD)** |
| Requirements | $68,000 |
| Design | $50,500 |
| Development | $1,480,000 |
| Testing | $227,000 |
| Deployment | $4,500 |
| **Total** | **$1,830,000** |

**Customer Responsibilities**

* The University of Texas at Dallas (UTD) assigns a point of contact (POC) for the Development team to coordinate their efforts with and address existing and emerging concerns.
* UTD facilitates the requirement elicitation process for development team by giving them free access to the necessary facilities and persons
* UTD determines the type of technology it wants to use for tracking empty space.
* UTD provides the hardware needed for the project.
* UTD surveys and determines where the required hardware needs to be installed.
* UTD install the required hardware in the designated locations.
* As UTD enforces a color-coded parking permit, the project requires UTD to do any necessary rearrangements in its open-area parking spaces.
* UTD makes its open-area parking spaces controllable based on its permit policy.
* UTD compensates the development team, as agreed, upon the delivery of the product.
* UTD pays the cost of labor, equipment, and services associated with the project.
* In case of taking any fees for the service provided by the App, UTD integrates and normalizes the app with its current parking billing system or any other DBs.
* UTD facilitates and cooperates in the possible software-hardware integration pilot testing
* UTD participates in the last integration testing.
* UTD is responsible for providing an updated map of the various parking lots around campus and the surrounding roads leading in and out of them.
* UTD shall provide timely feedback about malfunctions and defects in software as well as make design changes to the front-end system should they deem it necessary.

**Assumptions and Dependencies**

* Users will need to provide their license plate number and parking tag color to when first using the app.
* KLY Inc. shall use industry best practices when building the hardware, establishing the wide area network, and developing a mobile application to reduce the number of defects in the final deliverable.
* KLY Inc. shall use industry best practices when handling delicate user information so ensure the security of our users personal information.
* Users are expected to make their best attempt at securing their personal account information.
* UTD shall choose which parking lots the hardware for this project will be installed at.
* The mobile application shall display the most recent geographic layout of the UTD campus to its users.
* Should the UTD campus change the layout of its parking lots, UTD shall provide KLY Inc. an updated map of the campus.
* Should any hardware components be damaged, UTD shall report the damages to KLY Inc. at their earliest convenience.
* Data collected (user information, application downloads, parking statistics, etc.) by the system will be provided to UTD should they send a formal request to KLY Inc..
* Users will have to provide their UTD credentials to have access to the mobile application.
* Hardware upgrades and replacements shall only be conducted should both UTD and KLY Inc. agree to the arrangement.
* Individuals without a parking tag and/or valid parking license number shall not be allowed to use the mobile application.

**Acceptance Criteria**Acceptance of Services:

* The development team shall notify the University of Texas at Dallas upon the completion of the services by sending a notice of completion. Upon receiving this notice, the University of Texas at Dallas will have seven days to examine the acceptability of the delivered services and their conformance to the requirements as stated in the SOW. Should the delivered products be found underperforming and/or unacceptable from what was agreed upon in the SOW, the University of Texas at Dallas shall send a notice of revision to the development team.

The development team shall deem the services as accepted and finished if any of the following occurs:

1. Seven days have passed since the notice of completion has been sent with no response of non-conformance from the University of Texas at Dallas.
2. The University of Texas at Dallas notifies the development team of their acceptance of the deliverables provided.
3. The University of Texas at Dallas utilizes any of the delivered products in any shape or form of business operations other than testing the deliverables for conformance.

**Scope**

The purpose of this project is to help UTD students and other affected parties determine which parking lots have available spots on campus. KLY Inc. is delivering a system comprised of a mobile application, parking lot gate hardware, and a host computer system in order to show the levels of various parking lots around campus in real-time. The mobile app allows users to filter which parking lots have available spaces based on colored parking permits and filter out parking lots that do not have the desired colored spaces.

This project was created in order to reduce the stress of finding a parking spot on the UTD campus as well as save students’ time attempting to find a parking space. KLY Inc. has decided to develop an app that is able to display the number of open spots at any given parking lot on the UTD campus. The mobile application would utilize user-friendly design and have a relatively low learning curve for users who may not be as skilled with mobile technology. This mobile application will greatly alleviate one the biggest problems on the UTD campus and make efficient use of people's time and money. With this app, KLY Inc. is dedicated to solving a real and present issue that commuting students and faculty have to face every work day when arriving on campus.

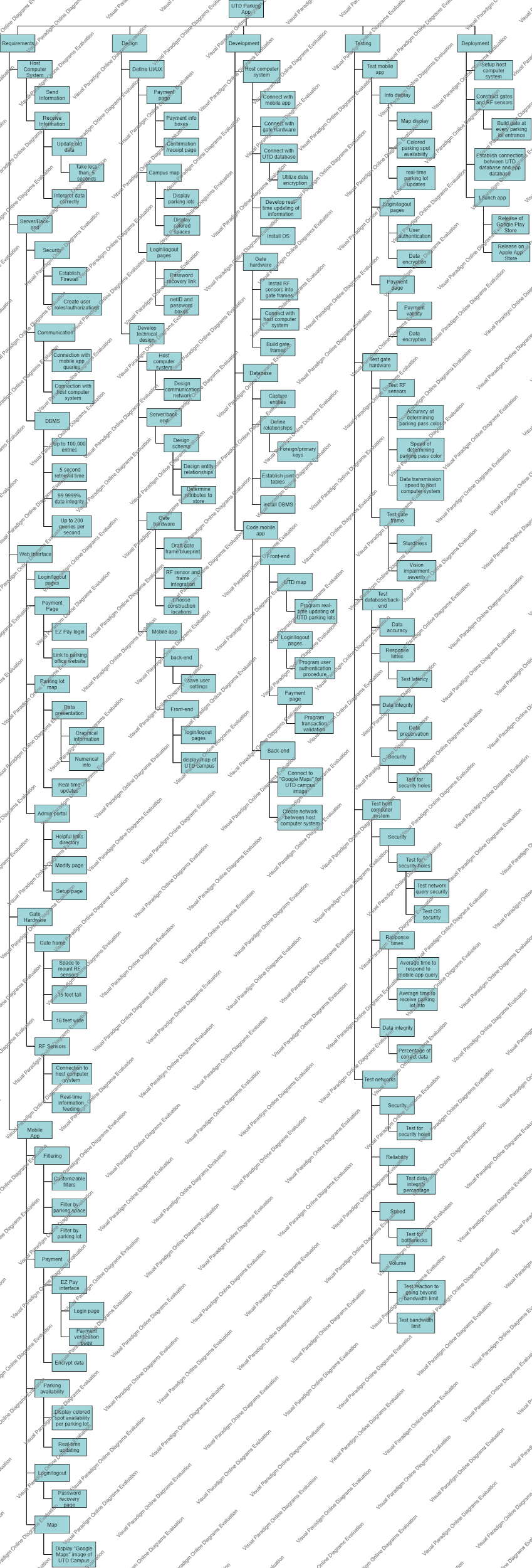
**Components**

1. Ability to view the various parking lots on the UTD campus and see the parking availability of each one.
2. Ability to communicate to the user which parking lots are full and which have valid parking still available.
3. Ability to filter which parking spaces are displayed to fit the user’s needs.
4. Ability to update the mobile app map display with real-time data that is captured as cars drive into various parking lots.

**Out of Scope**

* The mobile application will not work with any other universities or areas other than UTD.
* The system will not be able to detect when parking lots have closed down or are under maintenance.
* The mobile application will not support phones that do not have access to the Apple App Store or the Google Play Store.
* The mobile application will not advise users approximations/estimates on when various parking lots experience heavy traffic.
* The mobile application will not be able to determine the exact geographic location of the available spaces, only that they are within a specific parking lot.
* The mobile application will not enforce any UTD parking rules/laws and will not issue tickets/violations to offending users.
* The mobile application will not validate which parking spot the user has parked in - it will only assume that the user has parked in the highest tier colored parking space that they have access to.

**Work Breakdown Structure**



Level 1: UTD Parking Application

* Requirements
  + Host computer system
    - Send information
    - Receive information
      * Update old data with new data
        + Take less than .5 seconds
      * Interpret data correctly
  + Server/back-end
    - Security
      * Establish firewall
      * Create user roles and authorizations
    - Communication
      * Connection with mobile app queries
      * Connections with host computer system
    - DBMS
      * Up to 100,000 entries
      * .5 second retrieval time
      * 99.9999% data integrity
      * Up to 200 queries per second
  + Web interface
    - Login/logout pages
    - Payment page
      * EZ Pay login
      * Link to parking office website
    - Parking lot map
      * Data presentation
        + Graphical info
        + Numerical info
      * Real-time updates
    - Admin portal
      * Helpful links directory
      * Modify page
      * Setup page
  + Gate hardware
    - Gate frame
      * Space to mount RF sensors
      * 15 feet tall
      * 16 feet wide
    - RF Sensors
      * Connection to host computer system
      * Real-time information feeding
  + Mobile app
    - Filtering
      * Customizable filter
      * Filter by parking space
      * Filter by parking lot
    - Payment
      * EZ Pay interface
        + Login page
        + Payment verification page
      * Encrypt data
    - Parking availability
      * Display colored spot availability
      * Real-time updating
    - Login/logout
      * Password recovery page
    - Map
      * Display “Google Maps” image of UTD campus
* Design
  + Define UI/UX
    - Payment page
      * Payment info boxes
      * confirmation/receipt page
    - Campus map
      * Display parking lots
      * Display colored spaces
    - Login/logout pages
      * Password recovery link
      * netID and password boxes
  + Develop technical design
    - Host computer system
      * Design communication network
    - Server/back-end
      * Design schema
        + Design entity relationships
        + Determine attributes to store
    - Gate hardware
      * Draft gate frame blueprints
      * RF sensor and frame integration
      * Choose construction locations
    - Mobile app
      * Back-end
        + Save user settings
      * Front-end
        + login/logout pages
        + Display map of UTD campus
* Development
  + Host computer system
    - Connect with mobile app
    - Connect with gate hardware
    - Connect with UTD database
      * Utilize data encryption
    - Develop real-time updating of information
    - Install OS
  + Gate hardware
    - Install RF sensors into gate frames
    - Connect with host computer system
    - Build gate frames
  + Database
    - Capture entities
    - Define relationships
      * foreign/primary keys
    - Establish joint tables
    - Install DBMS
  + Code mobile app
    - Front-end
      * UTD map
        + Program real-time updating of UTD parking lots
      * Login/logout pages
        + Program user authentication procedure
      * Payment page
        + Program transaction validation
    - Back-end
      * Connect to “Google Maps” for UTD campus image
      * Create network between host computer system
* Testing
  + Test mobile app
    - Info display
      * Map display
      * Colored parking spot availability
      * Real-time parking lot updates
    - Login/logout pages
      * User authentication
      * Data encryption
    - Payment page
      * Payment validity
      * Data encryption
  + Test gate hardware
    - Test RF sensors
      * Accuracy of determining parking pass color
      * Speed of determining parking pass color
      * Data transmission speed to host computer system
    - Test gate frame
      * Sturdiness
      * Vision impairment severity
  + Test database/back-end
    - Data accuracy
    - Response time
      * Test latency
    - Data integrity
      * Data preservation
    - Security
      * Test for security holes
  + Test host computer system
    - Security
      * Test for security holes
        + Test network query security
        + Test OS security
    - Response times
      * Average time to respond to mobile app query
      * Average time to receive parking lot info
    - Data integrity
      * Percentage of correct data
  + Test networks
    - Security
      * Test for security holes
    - Reliability
      * Test data integrity percentage
    - Speed
      * Test for bottlenecks
    - Volume
      * Test bandwidth limit
      * Test reaction to going beyond bandwidth limit
* Deployment
  + Setup host computer system
  + Connect gates and RF Sensors
    - Build gate at every parking lot entrance
  + Establish connect between TUD database and app database
  + Launch app
    - Release on Google Play Store
    - Release on Apple App Store

**Stakeholders Mappings**

**Communication Plan**

**Governance Plan**

**Risk Management Plan**

**Change Management Plan**

**Lessons Learned List**