UMD DOTS Mobile Application Proposal

Group 4

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Introduction

This project aims to integrate transportation services provided by the UMD Department of Transportation Services (DOTS) and develop a comprehensive mobile application, ***Moving Terps***. It will serve as the main tool for assisting students, faculty, and staff to commute to and travel around the campus.

Project Team

- **Users**: Enrolled students, faculty, staff
- **Sponsors**: UMD DOTS
- **Responsibilities**:
  - **Initiation** - The entire team
  - **Analysis and Interviews**
    - **Collect requirements from students**: Jingru Liu, Ziqi Han, Yi-Ching Lin
    - **Collect requirements from faculty**: Raghul Pandi, Sameep Sheth
    - **Collect requirements from the Department of Transportation Services staff:** Kai-Hsiang Lin, Krishik Nataraj Gowda, Tanmay Bagdiya
    - **Requirements Determination:** The entire team

Project Justification

Introduction of Client

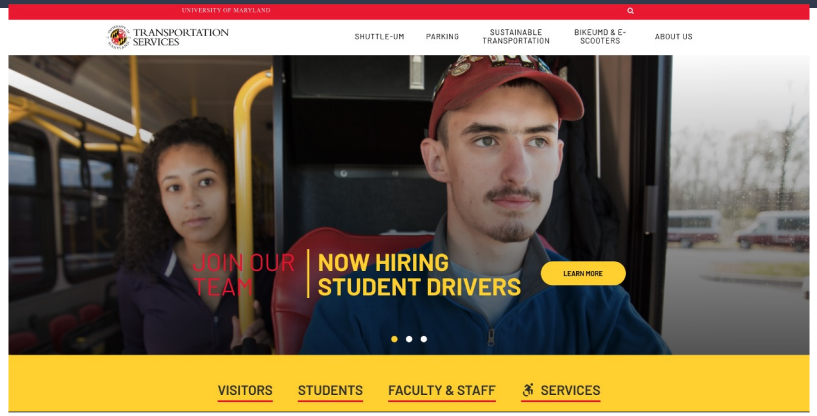
The Department of Transportation Services is an integral part of the University of Maryland (UMD). DOTS is committed to providing safe, cost effective and innovative services that anticipate the needs of our growing community of more than 50,000 students, faculty and staff in the city of College Park and beyond. The various services provided by DOTS include a free shuttle program for its users, an on-demand NITE ride facility for users living in the vicinity of the campus, Charter for long haul travel, parking system in the university, and sustainable transport facilities like carpool, carshare, electric vehicle charging stations.

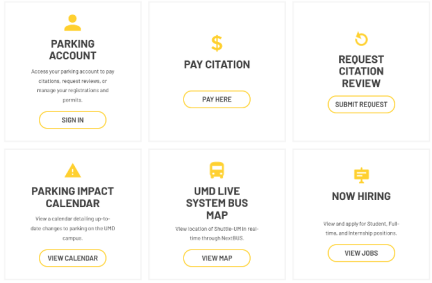
Project Justification (Cont.)

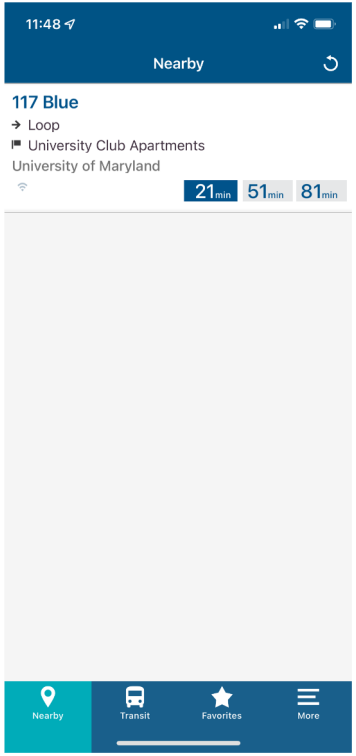
Opportunity

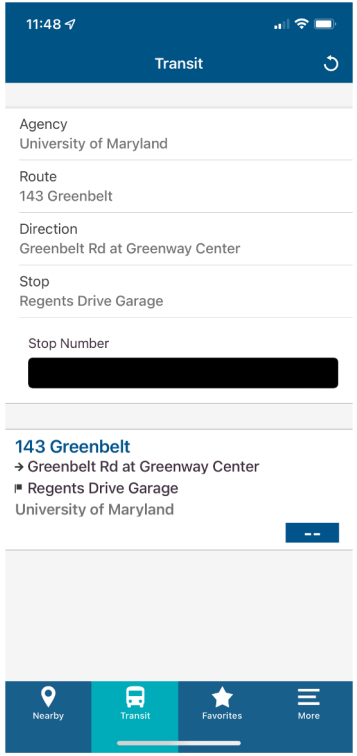
The main goal of a university transportation department is to provide cost effective and hassle free transportation to its users. UMD DOTS has many such facilities to achieve this goal, but the main problem that it faces is that this information is spread around multiple applications and websites with no single repository of information, which makes it difficult for users to take advantage of this facility. So, this project gives us an opportunity to integrate all the functions and facilities provided by DOTS into a single mobile application. We also aim to make these facilities more interactive and user friendly for all users by adding new functionalities in the application for shuttle service and for parking.

Current Mobile/Website User Interface









Project Objectives

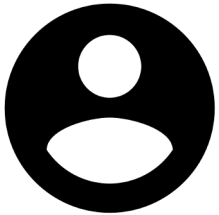
The main objective of ***Moving Terps*** is to better connect students, faculty and staff at University of Maryland with Department of Transport Services. Once implemented, this application will make everyday travel and parking in college effortless for the users.

Project Scope

Moving Terps is a mobile application which aims to make daily commute and parking facility around the campus more convenient and efficient. The app transforms the most frequently used services provided by the UMD Department of Transportation Services into functions on the interface for easier access. Enrolled students, faculty, and staff will have access to the application by logging into their directory id. As a user-based instead of office-based system, *Moving Terps* display transportation information in a more dynamic and smart way by allowing users to interact with the application and receive recommendations. The deployment of *Moving Terps* should increase users' satisfaction rate and provide much more intuitive and accurate transportation information.

Project Scope - Functions

- ***Accounts Management***: Users will be able to log into the application with UMD directory id. The system should be able to identify account types (student/staff/faculty.) Users can also save frequently-used bus routes and parking lots as favorites.



- ***Shuttle***: Users are able to enter starting location and destination, and the application will recommend bus routes along with real-time bus tracking information (location, arriving time and capacity) on an interactive map. Users can also check nearby stations and the routes passing by.

Project Scope - Functions (Cont.)

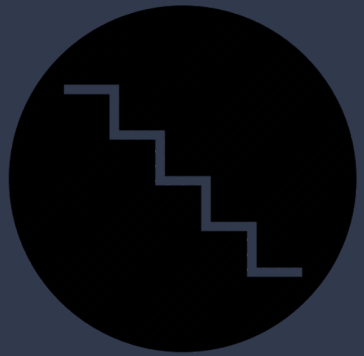
- ***Parking***: Users are able to enter starting location and destination, and an interactive map will show parking lot recommendations based on user type together with the detailed parking lot restrictions. Then, by clicking on a recommended parking lot, the system will show the direction to get to that selected parking lot. Users can update personal and vehicle information, pay for permits, citations, and temporary parking, appeal against citations.

- ***Notification***: Notify any impact schedule and current status (specific shuttle and parking lot availability during special events) through “push notification.” Users don’t need to check email or the impact calendar manually.

Project Scope - Integration

- Third-party online payment system to allow students to pay for parking permits, citations, and temporary parking.
- Mobile identity verification system to allow users utilize mobile devices to scan QR code/tap on a NFC (near-field communication) terminal so that their identity can be verified and the trip information can be stored in their accounts. A NFC terminal will need to be installed on each bus.

Project Methodology Selection



Waterfall & Prototype Mixed Methodology

- The project has well defined requirements that don't change substantially during the development cycle.
- There is privilege of time as most of the services, although not integrated and easy to use, are available across applications and DOTS website and existing mobile applications.
- Incorporating system prototype in the design phase, allows for feedback cycles from users to identify changes and refine real requirements before implementation.

Rough Project Plan

WBS	NAME	Duration	Start Date	End date
1	**Project**	187	2/9/22	8/19/22
1.1	**Initiation**	31	2/9/22	3/12/22
1.1.1	Preliminary plan	10	2/10/22	2/20/22
1.1.2	Detailed project plan	10	2/20/22	3/2/22
1.1.3	Objective identification	10	3/2/22	3/12/22
1.1.4	Plan finalization	1	3/12/22	3/12/22

WBS	NAME	Duration	Start Date	End Date
1.2	**Analysis and Interviews**	35	3/13/22	4/17/22
1.2.1	Collect requirement from students	10	3/13/22	3/23/22
1.2.2	Collect requirement from faculty	10	3/23/22	4/2/22
1.2.3	Collect requirement from transportation office	10	4/2/22	4/12/22
1.2.4	Requirement Determination	5	4/12/22	4/17/22

Rough Project Plan (Cont.)

WBS	NAME	Duration	Start Date	End date
1.3	**Design**	65	4/18/22	6/22/22
1.3.1	Design plan brainstorm	10	4/18/22	4/28/22
1.3.2	Prototype	20	4/29/22	5/9/22
1.3.3	Database design	10	5/10/22	5/19/22
1.3.4	Interface design	10	5/20/22	5/29/22
1.3.5	Back-End design	10	5/30/22	6/9/22
1.3.6	Documentation	5	6/10/22	6/22/22

WBS	NAME	Duration	Start Date	End Date
1.4	**Implementation**	39	6/23/22	8/1/22
1.4.1	Evaluate design plan	5	6/23/22	6/27/22
1.4.2	Unit implementation	20	6/28/22	6/18/22
1.4.3	Acquire system access	2	6/19/22	6/20/22
1.4.4	Integrated with different systems	10	6/21/22	6/30/22
1.4.5	Documentation	2	6/30/22	8/1/22

Rough Project Plan (Cont.)

WBS	NAME	Duration	Start Date	End Date
1.5	**Test**	17	8/2/22	8/19/22
1.5.1	Function Test	5	8/2/22	8/6/22
1.5.2	Requirement Check	5	8/7/22	8/11/22
1.5.3	User Feedback Analysis	5	8/12/22	8/16/22
1.4.4	Documentation	2	8/17/22	8/19/22