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**CSE 6224**

**SOFTWARE REQUIREMENTS ENG**

**System Requirements Specification (SRS)**

**Title:**

**Campus Ride-Sharing Platform with Parking System Integration**

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**Table of Contents**

[1. Introduction 4](#_Toc197803608)

[1.1. Purpose 4](#_Toc197803609)

[1.2. Scope 5](#_Toc197803610)

[1.3. Product Overview 6](#_Toc197803611)

[1.3.1. Product Perspective 6](#_Toc197803612)

[1.3.2. Product Functions 7](#_Toc197803613)

[1.3.3. User Characteristics 8](#_Toc197803614)

[1.3.4. Limitations 9](#_Toc197803615)

[1.4. Definition 10](#_Toc197803616)

[2. References 11](#_Toc197803617)

[3. Requirements 12](#_Toc197803618)

[3.1. Functions 12](#_Toc197803619)

[3.2. Performance Requirements 13](#_Toc197803620)

[3.3. Usability Requirements 14](#_Toc197803621)

[3.4. Interface Requirements 15](#_Toc197803622)

[3.5. Logical Database Requirements 16](#_Toc197803623)

[3.6. Design Constraints 17](#_Toc197803624)

[3.7. Software System Attributes 18](#_Toc197803625)

[3.8. Supporting Information 19](#_Toc197803626)

[4. Verification 20](#_Toc197803627)

[5. Appendices 21](#_Toc197803628)

[5.1. Assumptions and Dependencies 21](#_Toc197803629)

[5.2. Acronyms and Abbreviations 22](#_Toc197803630)

# **Introduction**

## **Purpose**

The purpose of this document is to outline the specific requirements needed to develop the Campus Ride-Sharing Platform with Parking System Integration, designed for use by students, staff, and faculty of Multimedia University (MMU). This platform aims to encourage eco-friendly commuting, reduce campus congestion, and optimize parking space usage by allowing verified users to share rides and view real-time parking availability.

The development team, project manager, quality assurance team, university stakeholders, and IT support personnel involved in the system's integration and deployment are the target audience for this document.

## **Scope**

The Campus Ride-Sharing Platform with Parking System shall facilitate mainly the following operations:

1. User registration and login via MMU digital ID verification.
2. Establishment and participation in ride-sharing programs for users going in comparable routes.
3. Real-time availability of parking spaces within MMU campus areas.
4. Notifications regarding ride requests, confirmations, and cancellations.
5. Ride history tracking and user feedback collection.
6. Earn and redeem carpool incentives (e.g., priority parking, vouchers).
7. Ensure safety through emergency alert features and identity verification via MMU SSO authentication.

## **Product Overview**

### **Product Perspective**

The Campus Ride-Sharing Platform with Parking System Integration is an integrated module in MMU's online environment, providing ride-sharing coordination and parking management. It connects students, faculty, and employees with university infrastructure for secure, efficient, and environmentally friendly trips.

This platform communicates with several MMU infrastructure's central components, enabling seamless data exchanges between security, transport logistics, and parking management. It communicates with the MMU SSO Authentication to ensure user entry authentication, employs the Campus Parking Database for real-time tracking, and employs a Carpool Matching Engine to process ride requests and approval. Additionally, a notification system provides the alerts on ride confirmations, parking spots, incentive notifications, and emergency alerts.

Part of MMU's overall drive for increased mobility on campus, the platform supports safe and verified ride-sharing, better use of parking space, and sustainable behavior encouragement through reward-based incentives. Fully integrated with MMU's IT infrastructure, security controls, and parking facilities management, the platform offers a convenient commuting experience in compliance with the university policy.

#### **System Interfaces**

* User authentication via MMU SSO for validated logins.
* Campus Parking Database API for live parking spot availability.
* Ride-matching engine for processing carpool requests and approvals.

#### **User Interfaces**

* Mobile UI optimized for iOS & Android with an interactive dashboard.
* Three-step workflows for ride matching, approvals, and parking lookup.
* In-app messaging & notifications to improve coordination.

#### **Hardware Interfaces**

* GPS tracking for ride location validation.
* Mobile device sensor compatibility (Wi-Fi, GPS, push notifications).
* Campus parking control integration to enforce carpool zones.

#### **Software Interfaces**

* Push notification services linked to MMU’s existing IT infrastructure.
* Database integration for user profile management, ride history, and incentive tracking.
* API-based connectivity with MMU's parking and security systems.

#### **Communications Interfaces**

* Secure HTTPS protocol for encrypted data transmissions.
* Campus-wide notification integration for ride status alerts and rewards.

#### **Memory Constraints**

* Lightweight mobile storage usage for cached ride and parking data.
* Optimized low-bandwidth transactions to reduce overhead.

#### **Operations**

* User-initiated ride matching and approval system.
* Automated ride confirmations & parking availability updates.
* Scheduled leaderboard tracking to promote high-participation incentives.

#### **Site Adaptation Requirements**

* Campus-wide maps integration displaying active parking zones.
* Compliance with MMU branding and security policies.

#### **Interfaces with Services**

* Cloud-based ride management & authentication for scalability.
* Potential third-party integrations for expanding ride networks beyond MMU.

### **Product Functions**

### **User Characteristics**

### **Limitations**

## **Definition**

|  |  |
| --- | --- |
| SSO | Single Sign-on authentication for users. |
| KPIs | Key Performance Indicators for tracking ride efficiency. |
| SOS | Emergency notification feature for safety alerts. |
|  |  |
|  |  |

# **References**

IEEE. (2018). *ISO/IEC/IEEE 29148:2018 Systems and software engineering—Life cycle processes— Requirements engineering.* https://www.iso.org/standard/72089.html

# **Requirements**

## **Functions**

## **Performance Requirements**

## **Usability Requirements**

## **Interface Requirements**

## **Logical Database Requirements**

## **Design Constraints**

## **Software System Attributes**

## **Supporting Information**

# **Verification**

# **Appendices**

## **Assumptions and Dependencies**

## **Acronyms and Abbreviations**

|  |  |
| --- | --- |
| SRS | System Requirements Specification |
| MMU | Multimedia University |
| ID | Identification |
| SSO | Single Sign- On |
| KPIs | Key Performance Indicators |
| SOS | Safe Operating Stop |
|  |  |