**Project Vision:**

The vision for the Campus Ride-Sharing Platform with Parking System Integration is to modernize campus transportation by creating a seamless, efficient, sustainable, and safe solution that addresses the commuting and parking challenges faced by the university community. The platform aims to foster a more connected and collaborative campus environment, ultimately transforming the university into a more efficient, sustainable, and cohesive place. It aspires to reclaim time lost to parking issues, reduce the environmental impact of commuting, and enhance the overall quality of life for every member of the campus community. In the long term, the project hopes to inspire similar initiatives beyond the university's borders.

**Project Scope:**

The project's scope encompasses the comprehensive development of a dual-platform solution: a mobile application for iOS and Android devices aimed at students and staff, and an accompanying web platform. This web platform will include a user-facing portal for desktop access to core functionalities and a robust administrative backend for MMU administrators.

Key areas within the scope include:

* **Core Ride-Sharing Functionalities:**
  + Secure user registration using MMU credentials with potential for advanced digital ID verification and multi-factor authentication.
  + Comprehensive profile management.
  + Ride matching through geolocation for pick-up/drop-off points.
  + Optimal route suggestions considering real-time traffic.
  + Live vehicle tracking with ETAs.
  + Flexible scheduling options for advance reservations and instant ride-finding, including easy cancellation or rescheduling.
  + In-app chat/call features for communication.
  + Push notifications for ride updates and campus alerts.
  + Automated, dynamic fare estimation and transparent cost-splitting.
  + Integration of diverse digital payment methods (including campus billing, e-wallets, and a potential cash toggle).
  + Detailed trip/payment histories.
  + A two-way rating and feedback system, including a suggestion function.
* **Integrated Parking Management Functionalities:**
  + Displaying real-time parking lot occupancy by integrating with campus sensor or gate systems.
  + Allowing users to reserve parking spots, potentially linked with ride-sharing.
  + Automated campus gate entry/exit via RFID or license-plate recognition.
  + Support for digital parking permits.
  + Dynamic parking fees based on demand.
  + Incentives for ride-sharing participants.
* **Safety and Security:**
  + In-app tools like an SOS button and trip sharing.
  + Robust driver and vehicle verification processes, including profile displays with ratings, support for background screening, and cross-checking vehicles against approved campus lists.
* **Administrative Web Platform:**
  + A centralized dashboard for system oversight.
  + Detailed reporting and analytics on usage and trends.
  + Tools for managing user roles, policies, and pricing.
  + Alerts for system maintenance needs.
  + Management of digital permits and potential integration points for citation workflows.
* **Non-Functional Requirements:**
  + Ensuring high performance, availability, and reliability.
  + Emphasis on usability through intuitive design and accessibility compliance.
  + Robust security measures to protect data.
  + A consistent brand identity.
  + A responsive interface for all users.
* **Limitations:**
  + The application's operational scope is limited to the MMU campus and its members.
  + The system is designed for non-commercial carpooling, adhering to relevant "Road Transport Regulations".
  + Functionality is dependent on integrations with various external campus systems (e.g., SSO, smart parking IoT databases, Vehicle Registry, In-App Wallet, Campus Map & Sensors, University Safety Office) and third-party services.

**Project Goals:**

The primary goal of this project is to design and develop a campus ride-sharing and parking app specifically tailored to address the persistent and multifaceted commuting and parking challenges encountered by students, faculty, and staff at the university.

Specific goals include:

* **Alleviate Commuting and Parking Challenges:**
  + Reduce traffic congestion on campus.
  + Address the chronic shortage of available parking spaces.
  + Help students avoid lateness to classes or missing deadlines due to parking searches.
  + Reduce stress and improve productivity for faculty and staff by easing logistical hurdles.
* **Streamline the Commuting Experience:**
  + Provide real-time updates on parking availability.
  + Direct users to viable parking options, saving time.
  + Intelligently match users with overlapping travel routes or schedules for ride-sharing.
  + Reduce the number of individual vehicles on campus, easing strain on parking and traffic.
* **Promote Sustainability:**
  + Substantially lower greenhouse gas emissions by encouraging ride-sharing and decreasing reliance on single-occupancy vehicles.
  + Reduce the campus’s overall carbon footprint.
  + Align with the university’s commitment to environmental stewardship.
* **Enhance User Experience, Safety, and Security:**
  + Prioritize an exceptional, accessible, and secure user experience.
  + Protect user data with a secure login system.
  + Enhance peace of mind with integrated emergency tools (e.g., quick-contact for campus safety).
  + Provide an intuitive and straightforward interface for users of varying technological proficiency.
  + Implement robust driver background checks and vehicle verification.
* **Foster Cultural and Operational Change:**
  + Catalyze broader cultural and operational change on campus.
  + Strengthen the sense of community by fostering a more connected and collaborative commuting network.
  + Support the institution’s strategic objectives of innovation and engagement.
* **Improve Overall Campus Environment:**
  + Transform the university into a more efficient, sustainable, and cohesive environment.
  + Enable students to arrive at lectures refreshed, faculty to approach work with fewer distractions, and staff to have a smoother start to their workday.
* **System Operational Goals:**
  + Offer core ride-sharing functionalities like user registration, digital ID verification, real-time tracking, dynamic fare estimation, cost splitting, and multiple digital payment options.
  + Integrate with the campus parking system to provide real-time parking availability, parking reservations, and automated gate access.
  + Provide administrators with tools for oversight of ride-matching, parking utilization, permit issuance, system health, reporting, and analytics.