Feasibility Report: **UniRide** *a Ride-Sharing Application*

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November 30, 2025

Part 1: Technical Feasibility Analysis

Technology Stack Assessment

Feasibility Assessment

Based on the technology stack analysis, the project appears **technically feasible and successfully implemented** with the following considerations:

- **Strengths:** Strong Java foundation, Firebase basics from CPI2

- **Learning Curve:** Some training and familiarization will be needed for Android Studio, and real-time technologies

- **Risk Areas:** Real-time data synchronization, real-time notifications, map integration and route estimation require careful implementation

- **Development Tools and Version Control:** The team is equipped with appropriate code editors (VS Code, Android Studio) and uses Git for version control enabling efficient collaboration and great code management

Steps for Moving Forward

1. Allocate 1-2 weeks for team training on Android Studio fundamentals

2. Build the app step by step, starting with the most important features first

3. Establish guidelines to ensure UniRide manages Google Maps requests efficiently and avoids exceeding usage limits

4. Make a clear plan to test our login system and backend APIs well

5. Gather user feedback for iterative improvements

Table 1: Technology Stack Analysis

Category	Tools & Technologies	Skills Available vs Needed	Potential Technical Challenges
Frontend	Android (Java), XML Layouts	Java known; Android development learning need	Android Activity lifecycle, RecyclerView implementation
Backend	Firebase Firestore, Firebase Authentication	Firebase integration already mastered previously	Real-time data synchronization, Security rules
Database	Firebase Firestore	Firebase firestore integration already mastered previously	Ride-sharing data design
Auth	Firebase Authentication	Firebase Authentication integration already mastered previously	User session management, Secure authentication
Storage	64-bit document converter	File upload system learning need	Document storage and retrieval
Notifica-tions	Firestore Real-time Listeners	Messaging app experience	Live data updates, Listener management
Maps	Google Maps API, Google Places API, Distance Matrix API	Multiple Google APIs integration learning need	Map integration, API usage optimization
Messaging	WhatsApp Integration	No previous experience...	device compatibility and number verification
Dev Tools	Android Studio, Git, GitHub	Android IDE familiarization	Mobile development, API testing
Hardware	2 Android devices, Emulators	Available and ready to use	—

Part 2: Market and User Feasibility Analysis

1. Target Users and Their Needs

Target Users: Campus community including students, faculty, staff, and occasional visitors.

Needs:

- A convenient platform to offer rides especially when campus shuttles are unavailable or inconvenient

- Real-time ride availability

- Ability to connect with others traveling off-campus for shared rides

- Short trips between campus buildings (Restaurant, Phase3...)

- Easy communication with drivers/riders

- Safe and verified drivers

- Transparent pricing

- Multi-passenger bookings

2. Competitive Analysis of Similar Products

Table 2: Comparison of Existing Transportation Solutions

Service	Strengths	Limitations
inDrive App	• Popular ride-hailing platform • Passengers and drivers can directly negotiate fares • Available throughout the entire city of Rabat	• Not designed for small areas like university campuses • Lacks campus-specific features • No optimization for short trips between buildings
Campus Shuttles	• University-provided service • Structured schedules and routes	• Fixed schedules that don't allow much flexibility • Limited number of seats available • Reduced service on weekends, holidays, and late at night
Carpooling Programs	• Reduces traffic • Cost-sharing benefits	• Relies on informal methods (social media, word of mouth) • No dedicated app for management • Difficult to organize and trust without formal system

3. Market Gaps and Opportunities

Table 3: Identified Market Gaps and Potential Solutions

Identified Gap	Opportunity for Our Solution
No single app provides ride offers for campus users	Create an integrated platform focused on the specific needs of the campus community
Need for a flexible and affordable transport option designed specifically for the campus	Offer a tailored service that fits the campus environment and user (student) budgets
Poor real-time communication between riders and drivers	Implement WhatsApp integration for instant, traceable communication

4. Survey and User Feedback

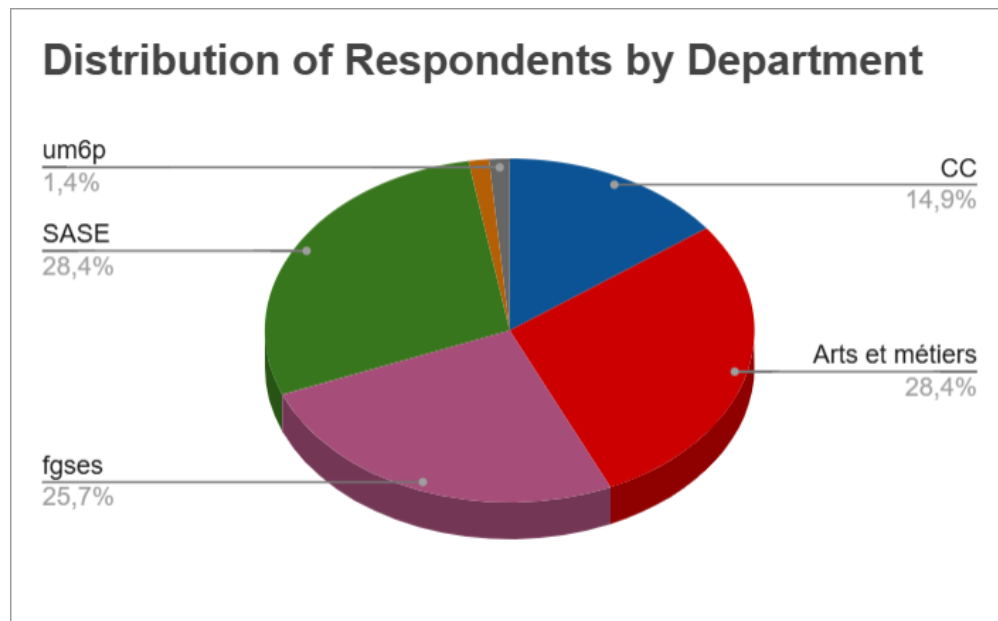**Part 1: Distribution of Respondents by Department**

Figure 1: Distribution of Respondents by Academic Department

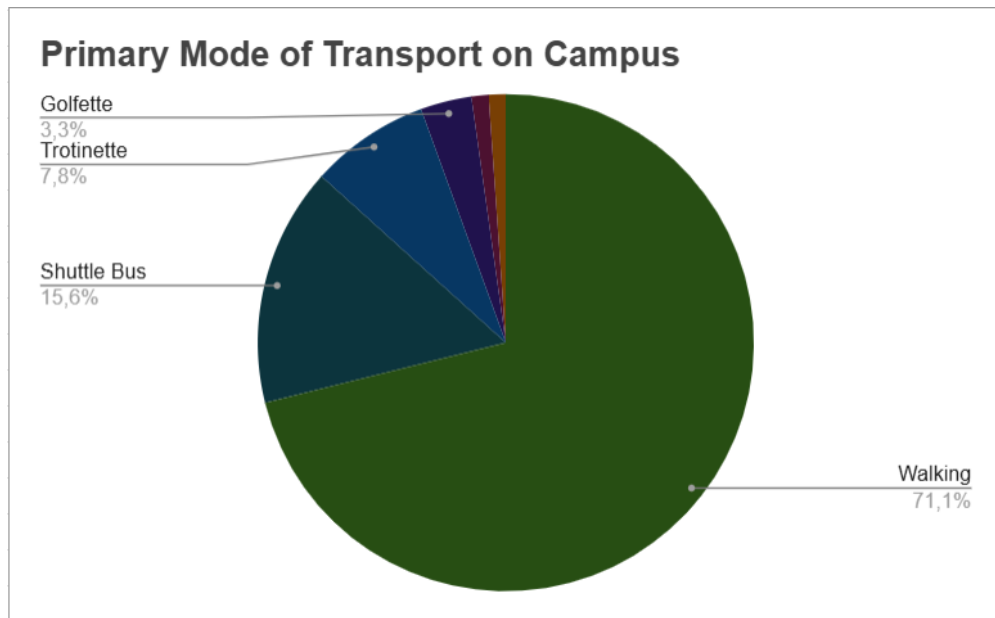**Part 2: Primary Mode of Transport on Campus**

Figure 2: Primary Mode of Transportation Used on Campus
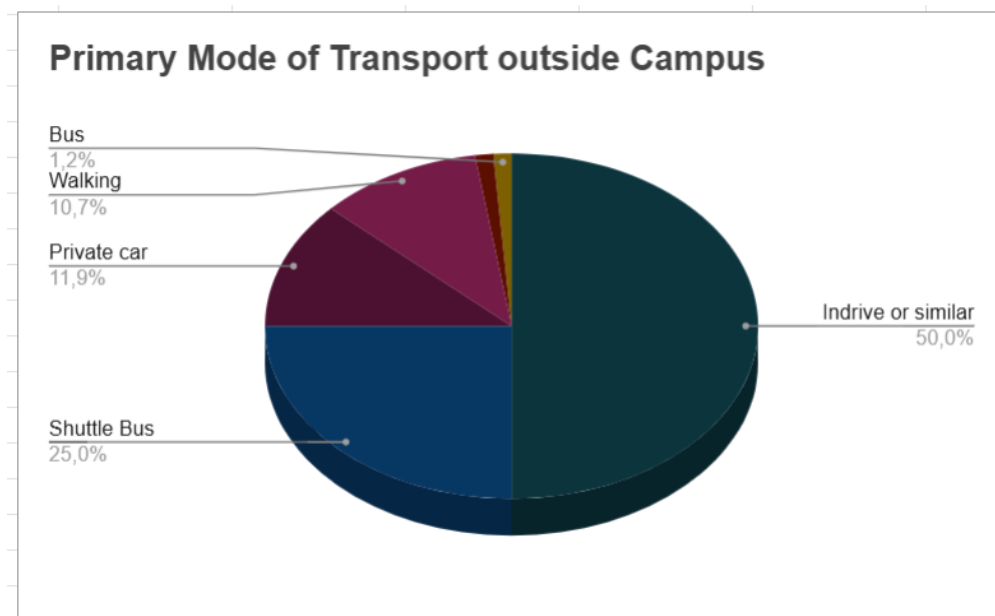
Part 3: Primary Mode of Transport outside Campus

Figure 3: Primary Mode of Transportation Used outside Campus

Part 4: Travel Frequency on Campus

High Demand Confirmed:

- 77% of users travel frequently (7/10 or higher)

- 54% are very frequent travelers (9-10/10 rating)

- Average frequency: 7.2/10

Part 5: Travel Outside Campus Frequency

Usage Patterns:

- Average frequency: 4.1/10

- Only 19% are frequent travelers (7/10 or higher)

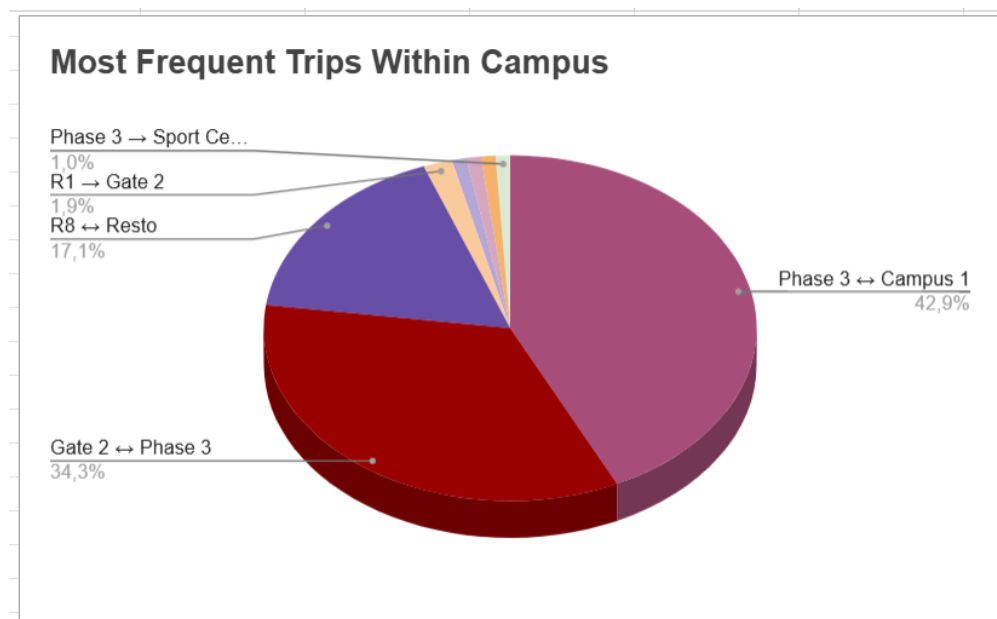**Part 6: Most Frequent Trips Within Campus**

Figure 4: Most Frequent Types of Trips Within Campus

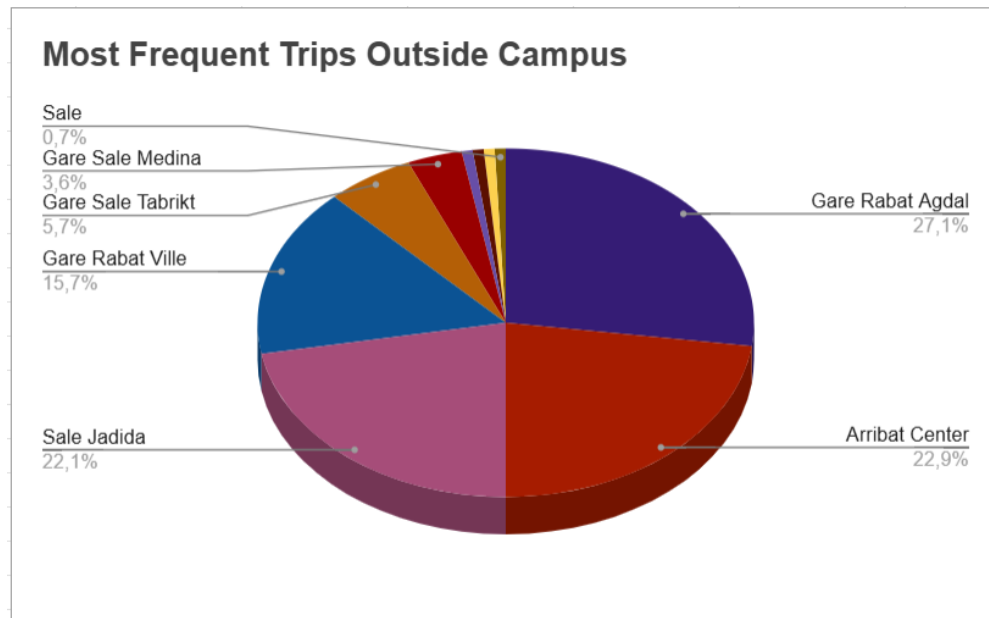**Part 7: Most Frequent Trips Outside Campus**

Figure 5: Most Frequent Types of Trips Outside Campus

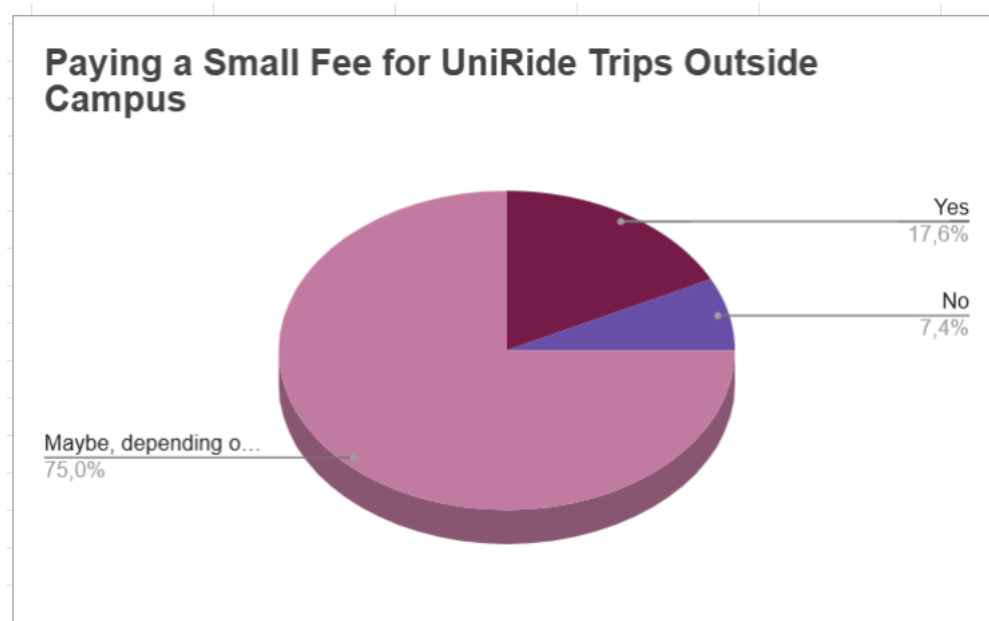**Part 8: Paying a Small Fee for UniRide Trips Outside Campus**

Figure 6: Willingness to Pay Small Fees for Off-Campus Trips

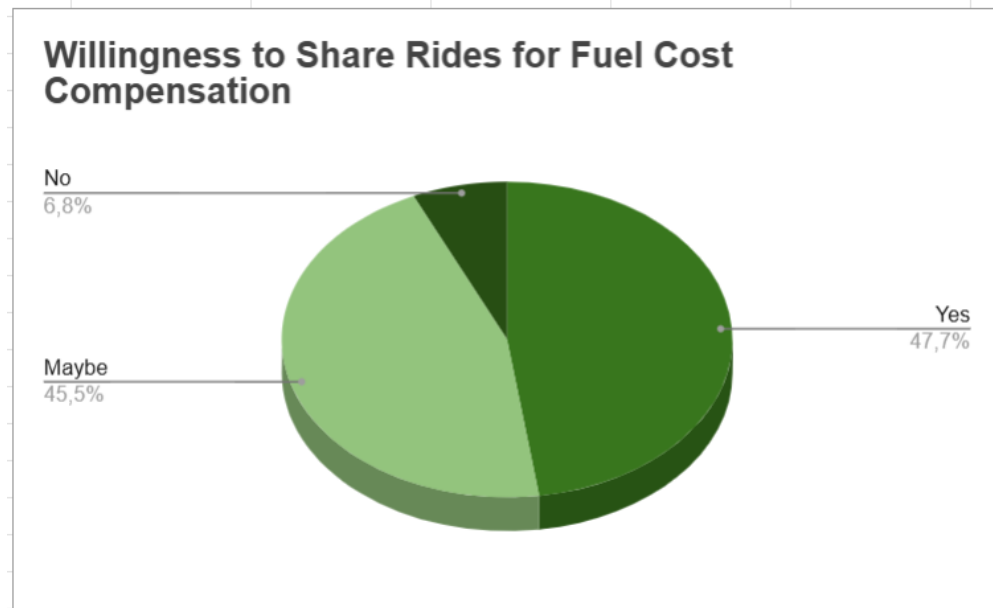**Part 9: Willingness to Share Rides for Fuel Cost Compensation**

Willingness to Share Rides for Fuel Cost Compensation

No
6,8%

Yes
47,7%

Maybe
45,5%

Figure 7: Willingness to Share Rides for Fuel Cost Compensation

Part 10: App Usefulness Rating by Respondents

Key Findings:

- High perceived usefulness - 72.2% rate 8/10 or higher

- Strong positive reception - 36.1% give maximum rating (10/10)

Part 11: Likelihood of Using UniRide

How likely are you to use UniRide if it were available?

- Very high perceived usefulness - 72% rate 8/10 or higher

- Strong maximum rating - 38% give perfect 10/10 score

- Overwhelmingly positive - 85% rate 7/10 or above
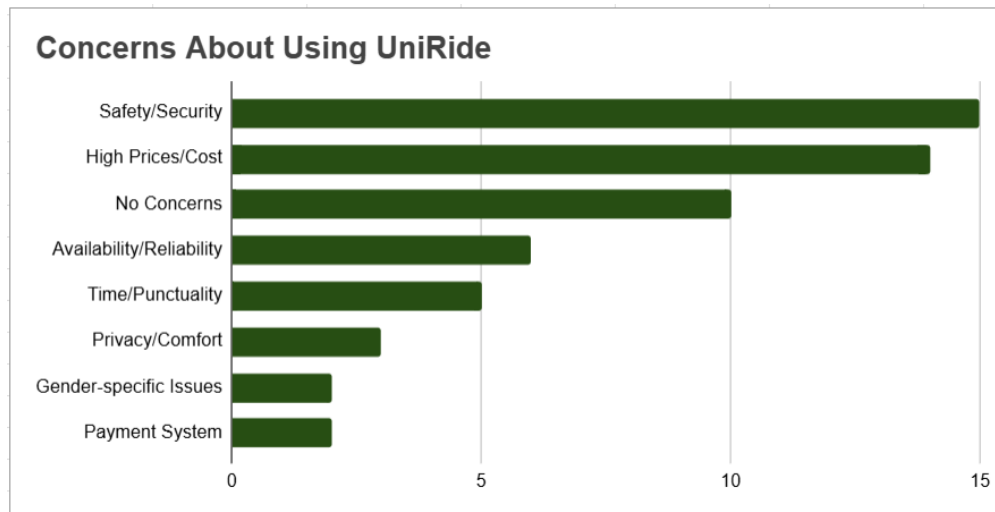
Part 12: Concerns About Using UniRide

Figure 8: Primary User Concerns About Using UniRide

Part 13: Suggestions and Expectations for UniRide

- Implement subscription-based pricing model

- Ensure 24/7 availability with frequent service intervals

- Include gender-specific safety features

- Focus on reliability and punctuality

- Plan for multi-university expansion

Part 3: Schedule Feasibility

Project Timeline and Task Breakdown

To evaluate how practical the UniRide app is over time, the project has been broken down into clear development phases with estimated timelines, creating a realistic and achievable plan for implementation

Table 4: Project Development Timeline

Task	Week 1	Week 2	Week 3	Week 4	Week 5
Requirements Gathering & Analysis	■■■■■■				
Learning Android & Firebase	■■■■■■				
Backend Development (Firebase)		■■■■■■	■■■■■■		
Frontend Development (Android)		■■■■■■	■■■■■■		
API Integration & Map Setup			■■■■■■	■■■■■■	
Real-time Features & WhatsApp				■■■■■■	■■■■■■
Testing & Bug Fixing					■■■■■■

Table 5: Project Task Breakdown

Task Category	Task Description	Estimated Duration
Requirements & Planning	Gather and finalize functional & non-functional requirements	1 week
Learning & Setup	Familiarize with Android development, Firebase, Google Maps API	1 week
Backend Development	Set up Firebase project with Firestore database. Design data models (User, Driver, Ride, RideOffer). Implement Firebase Authentication. Develop document upload system. Create admin verification workflow.	2 weeks
Frontend Development	Set up Android Studio project. Create activities for login/signup, ride requests/offers. Implement RecyclerView adapters. Integrate Google Maps API and Places Autocomplete. Develop admin dashboard.	2 weeks
Integration & Features	Implement real-time Firestore listeners. Add WhatsApp integration. Develop multi-seat booking system. Create fare calculation logic.	1 week
Testing & Bug Fixing	Test all functionalities (authentication, rides, real-time updates). Fix bugs and optimize performance.	1 week
Deployment & Documentation	Prepare for Google Play Store deployment. Write project documentation.	1 week

Note on Timeline While the project schedule is designed to cover all essential features within the 5-week timeframe, the deadline is somewhat tight. As a result, some additional

or advanced functionalities—such as enhanced user profiles, complex ride scheduling options...—may not be fully developed by the initial release. These features can be planned for future updates once the core application is stable and operational.

Conclusion

The project schedule has been carefully broken down into clear, manageable tasks aligned with the available 5-week timeline. By prioritizing core functionalities such as user authentication, ride offers, and route integration early in the development phase, the team can ensure a working prototype within the semester. Overlapping frontend and backend development will optimize progress, while dedicating the final week to testing will help deliver a stable and functional application. Although the timeline is tight, with focused effort and good time management, completing UniRide within the given period is feasible.