Design Brief

Roadside Assistance Platform

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Author Design Team	Last Updated May 10, 2025

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1 Team Members

Name	Role	Responsibilities
Younes Bouhouche	Project Manager, Android Developer	Overall project coordination, timeline management
Abderrahmane Abdat	Android Developer	Apps backend development using Kotlin and Ktor
Oussama Chatri	Android Developer	Client and provider mobile app development using Kotlin and Jetpack Compose
Mohamed Amine Lachi	Backend Developer	API development, database design, message queue implementation
Nadjet Bennaceur	Lead UX/UI Designer	User experience design, interface design, design system implementation

2 Introduction

The Roadside Assistance Platform is a comprehensive solution designed to connect stranded motorists with nearby service providers quickly and efficiently. The platform aims to modernize the roadside assistance industry by leveraging mobile technology, real-time location tracking, and seamless payment processing.

This design brief outlines the conceptual framework, technical specifications, and visual design principles that will guide the development of the platform's four main components:

- **Client Mobile Application** - For customers to request roadside assistance
- **Provider Mobile Application** - For service providers to receive and fulfill assistance requests
- **Backend API** - To handle data processing, business logic, and third-party integrations
- **Admin Dashboard** - For platform administrators to manage users, monitor operations, and analyze performance

The platform is being developed with a user-centered design approach, focusing on simplicity, reliability, and efficiency—critical factors in emergency situations when users need immediate assistance.

3 Objectives

3.1 Business Objectives

- **Market Disruption** - Create a modern alternative to traditional roadside assistance services with improved response times and transparent pricing
- **Revenue Generation** - Establish multiple revenue streams through service fees, subscription plans, and provider commissions
- **Scalability** - Design a platform that can easily expand to new geographic regions and accommodate increasing user numbers
- **Provider Network** - Build a reliable network of vetted service providers with diverse capabilities
- **Brand Recognition** - Develop a trusted brand associated with reliability, safety, and customer satisfaction

3.2 User Objectives

For Clients:

- **Fast Response** - Receive prompt assistance during roadside emergencies
- **Transparency** - Know upfront costs, provider details, and estimated arrival times
- **Safety** - Feel secure with vetted providers and real-time tracking
- **Convenience** - Request assistance with minimal effort and clear communication
- **Reliability** - Trust that help will arrive as promised

For Providers:

- **Steady Work** - Access a consistent stream of service requests
- **Efficient Dispatching** - Receive nearby requests that match their capabilities
- **Clear Information** - Get detailed information about the service needed
- **Reliable Payment** - Receive prompt and secure payment for services rendered
- **Reputation Building** - Build a positive reputation through ratings and reviews

3.3 Technical Objectives

- **High Availability** - Ensure the platform remains operational 24/7 with minimal downtime
- **Scalability** - Design systems that can handle growing user bases and request volumes
- **Performance** - Optimize for speed, especially for critical operations like request matching
- **Security** - Implement robust security measures to protect user data and payment information
- **Reliability** - Build fault-tolerant systems with appropriate redundancy

- **Maintainability** - Create well-documented, modular code that can be easily maintained and extended

4 Conception

4.1 Design Philosophy

The design of the Roadside Assistance Platform is guided by several key principles:

- **Simplicity in Crisis** - The user interface is designed to be intuitive and straightforward, recognizing that users may be stressed or in emergency situations when using the app.
- **Transparency** - Clear communication of process, pricing, and timing throughout the user journey to build trust.
- **Accessibility** - Ensuring the platform is usable by people with various abilities and in different contexts (e.g., low light, poor weather).
- **Reliability** - Designing for offline capabilities and graceful degradation when connectivity is limited.
- **Consistency** - Maintaining a cohesive experience across all touchpoints using Material Design 3 principles.

4.2 Design System

The platform utilizes Material Design 3 principles with a custom color palette and component library:

Color Palette

- Primary: #8B262F
- Secondary: #CF6679
- Tertiary: #BFEAFE
- Neutral: #323232

Typography

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Heading 2
Inter / 20px / Semibold

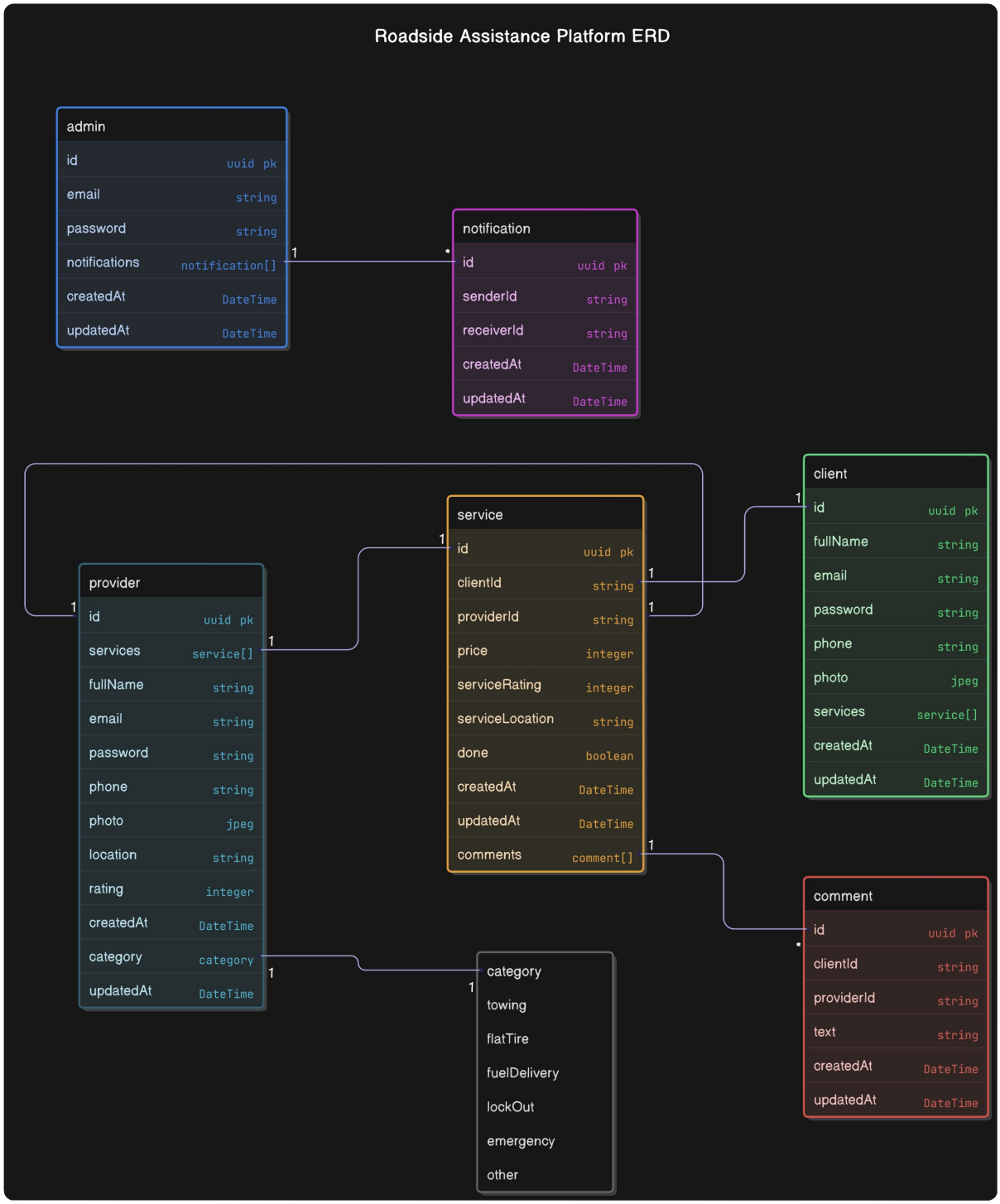
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Body Text
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5 Class and Use Case Diagrams

5.1 Class Diagram

The following class diagram illustrates the core domain model of the Roadside Assistance Platform:

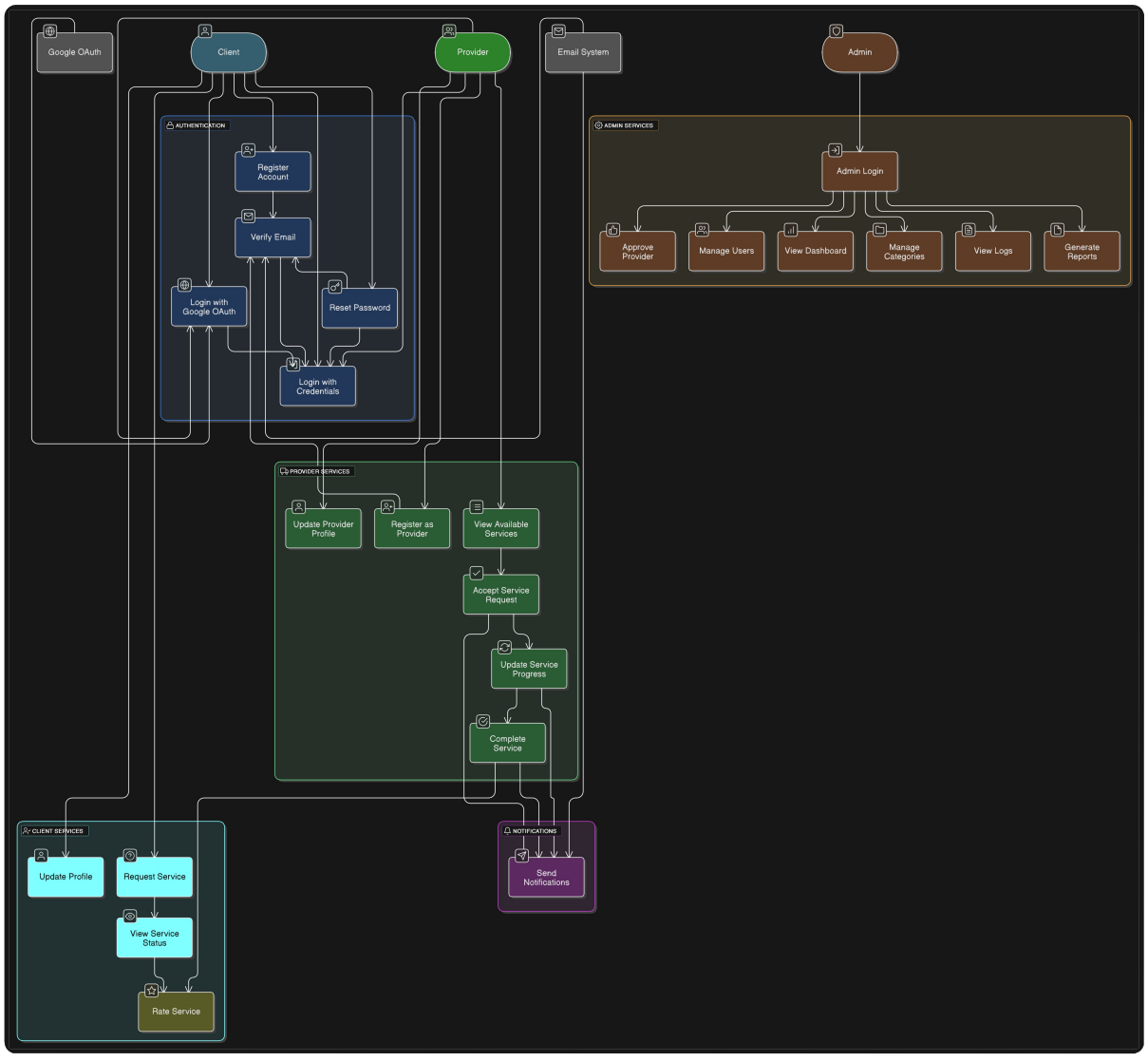


Key classes in the system include:

- **User** - Base class for all users with common attributes like name, contact information, and authentication details

- **Client** - Extends User with client-specific attributes like payment methods and service history
- **Provider** - Extends User with provider-specific attributes like service capabilities, equipment, and availability status
- **ServiceRequest** - Contains details about assistance requests including location, service type, status, and timestamps
- **Rating** - Stores feedback and ratings for both clients and providers

5.2 Use Case Diagrams



Client Use Cases

Primary client use cases include:

- Register and manage account
- Request roadside assistance
- Track provider location and ETA
- Communicate with provider

- Make payment for services
- Rate and review service experience
- View service history
- Manage payment methods

Provider Use Cases

Primary provider use cases include:

- Register and manage provider profile
- Update availability status
- View and accept service requests
- Navigate to client location
- Communicate with client
- Update service status
- Complete service
- Rate client interaction
- Track earnings and payouts

Admin Use Cases

Primary admin use cases include:

- Manage user accounts (clients and providers)
- Monitor active service requests
- Intervene in service issues
- Generate and analyze reports
- Configure system settings
- Handle disputes and refunds

6 Tech Stack

The Roadside Assistance Platform is built using modern technologies selected for their performance, reliability, and developer experience:

6.1 Mobile Applications

Technology	Purpose	Justification
Kotlin	Primary programming language for Android apps	Modern, concise syntax with strong type safety and excellent Android support
Jetpack Compose	UI toolkit for building native Android UI	Declarative UI paradigm, improved developer productivity, and better performance
Ktor Client	HTTP client for API communication	Kotlin-first HTTP client with coroutine support for efficient networking
Material Design 3	Design system for consistent UI/UX	Modern, adaptive design system with excellent Jetpack Compose integration
Mapbox SDK	Maps, location tracking, and navigation	Powerful mapping capabilities with customization options and offline support

6.2 Backend Services

Technology	Purpose	Justification
Express.js	Web framework for API development	Lightweight, flexible framework with extensive middleware ecosystem
PostgreSQL	Primary database	Robust relational database with excellent geospatial capabilities via PostGIS
Prisma ORM	Database access and migrations	Type-safe database client with intuitive API and powerful migration tools
RabbitMQ	Message broker for async communication	Reliable message queuing for decoupled services and improved scalability

6.3 Web Applications

Technology	Purpose	Justification
Next.js	React framework for web applications	Server-side rendering, API routes, and excellent developer experience

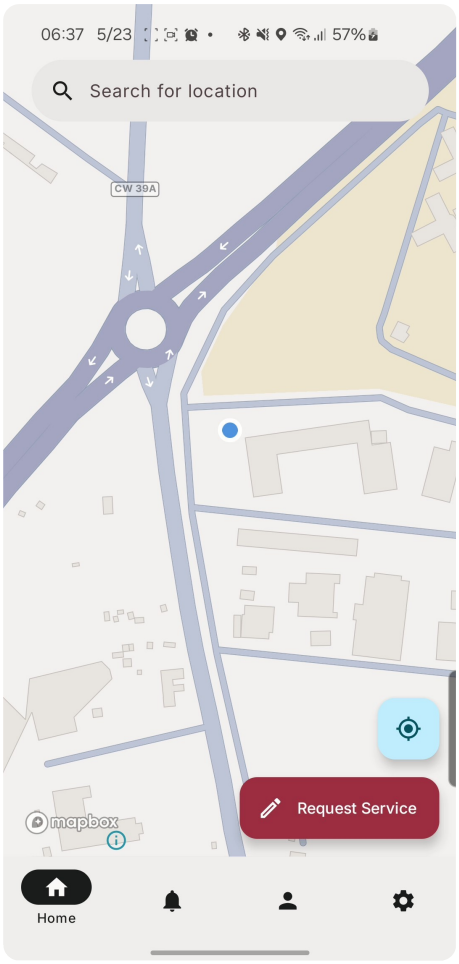
Technology	Purpose	Justification
React	UI library for component-based development	Component-based architecture for maintainable UI development
TypeScript	Type-safe JavaScript superset	Static typing for improved code quality and developer experience
Tailwind CSS	Utility-first CSS framework	Rapid UI development with consistent design system integration
Rechart.js	Data visualization	Simple yet powerful charting library for analytics dashboards

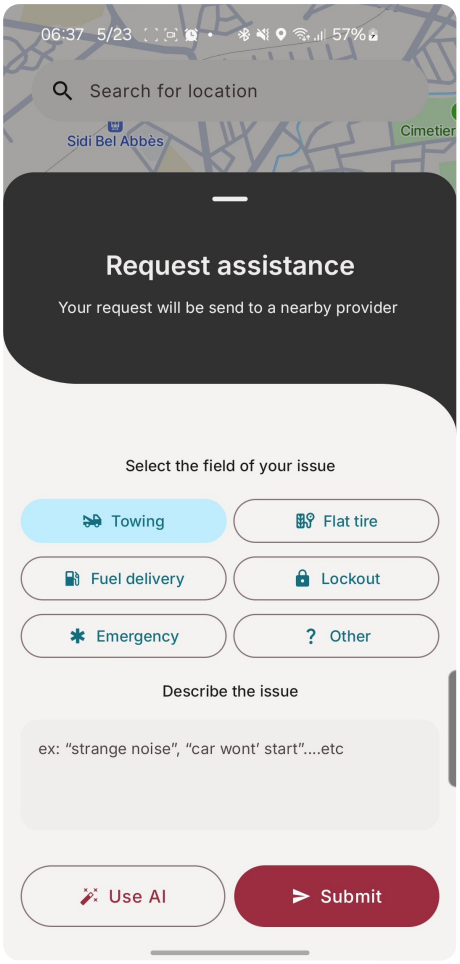
6.5 Design & Collaboration

Technology	Purpose	Justification
Figma	UI/UX design and prototyping	Collaborative design platform with powerful prototyping capabilities
Clickup	Team management	Project management and team collaboration tool for task tracking and communication

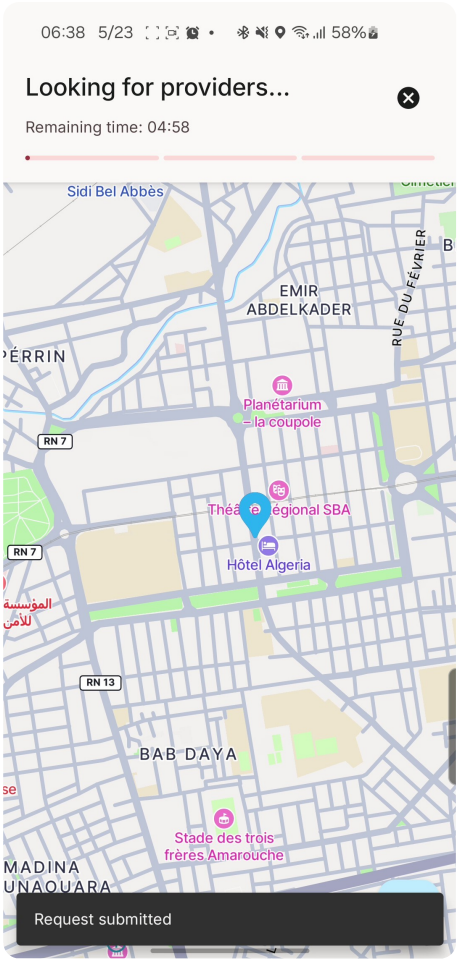
7 Screenshots

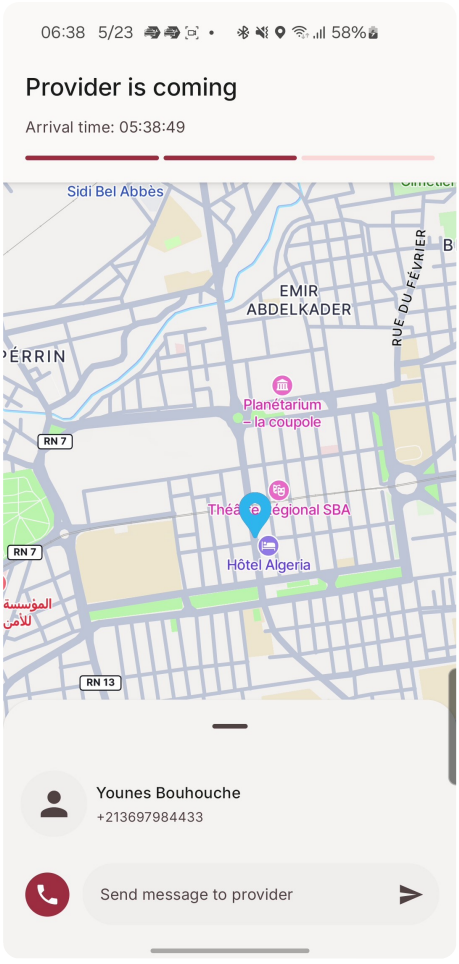
7.1 Client Mobile App

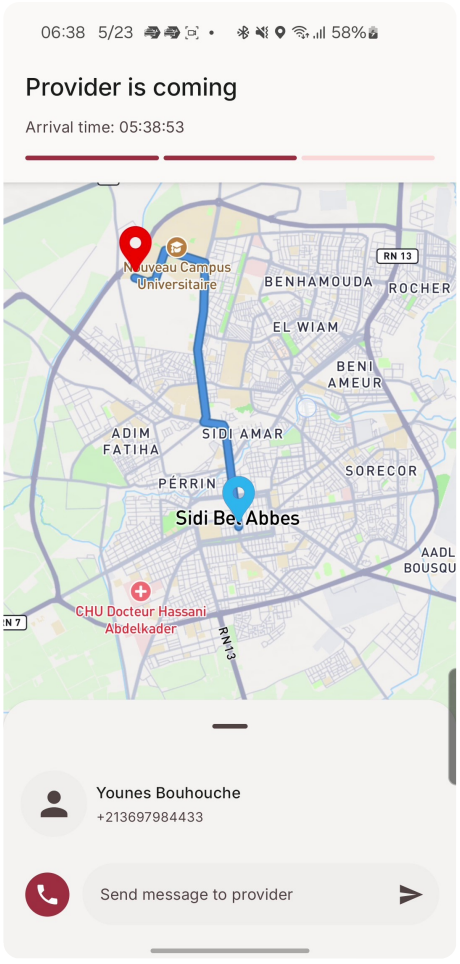


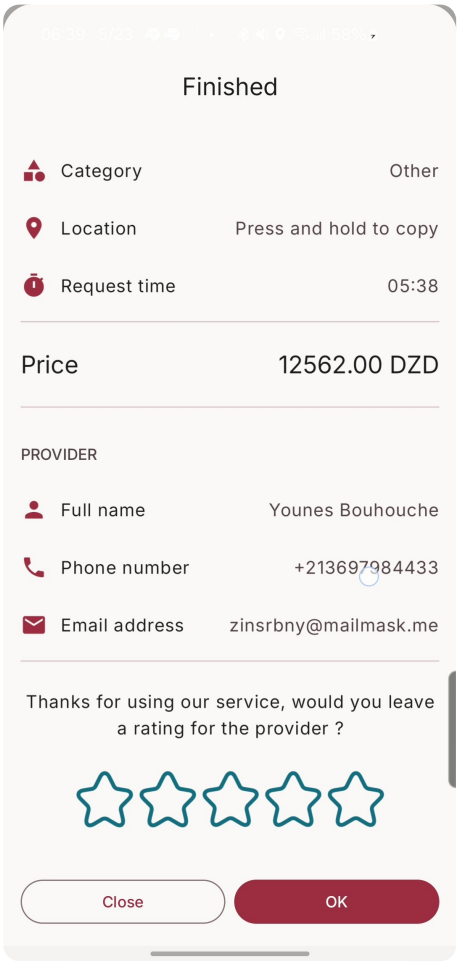




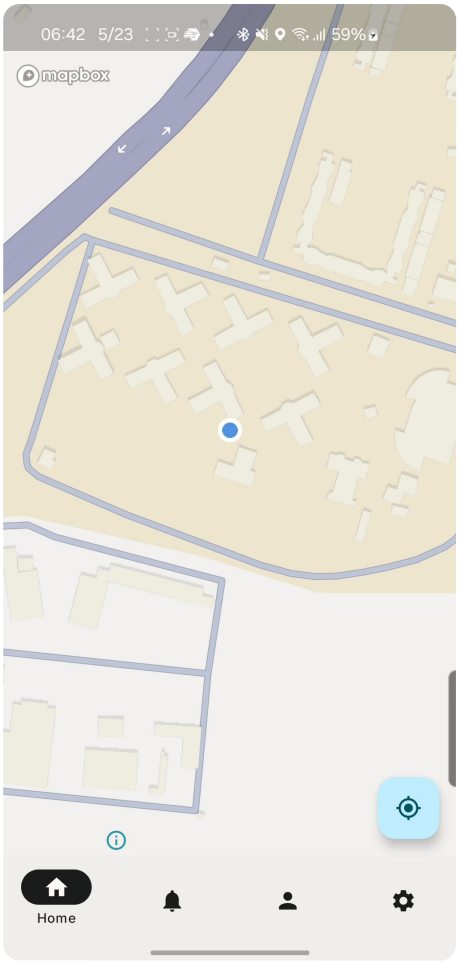


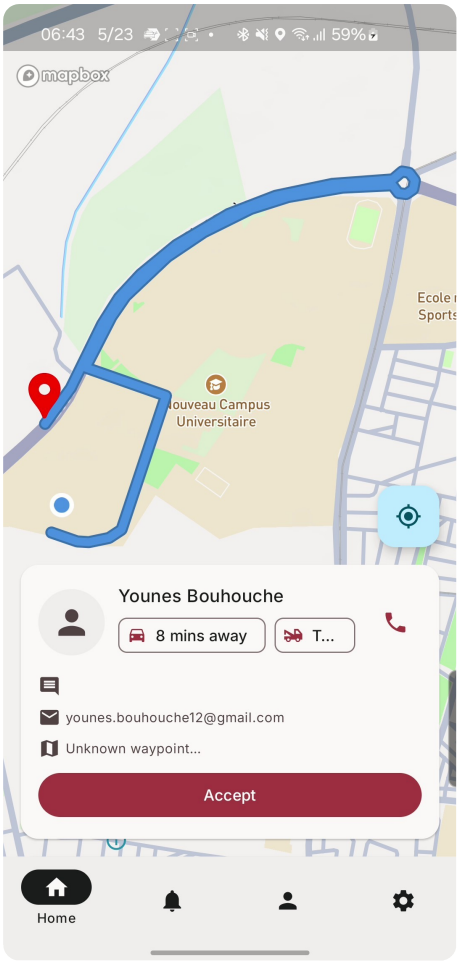


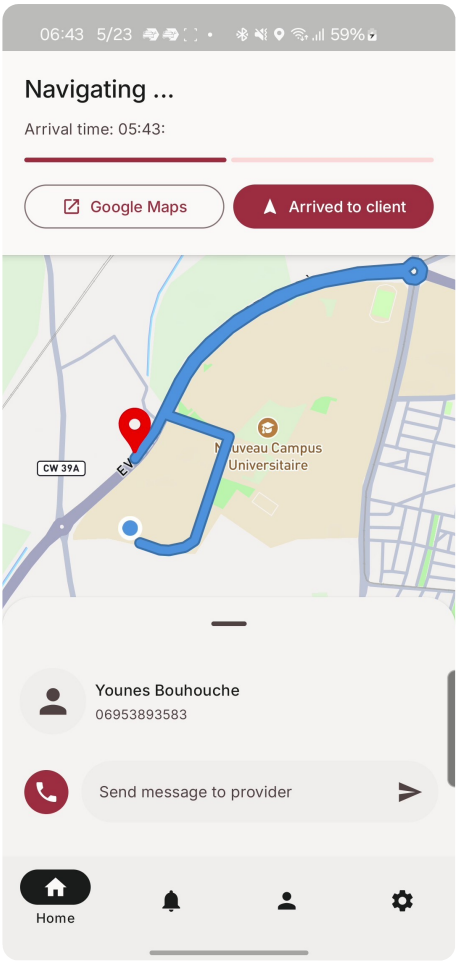


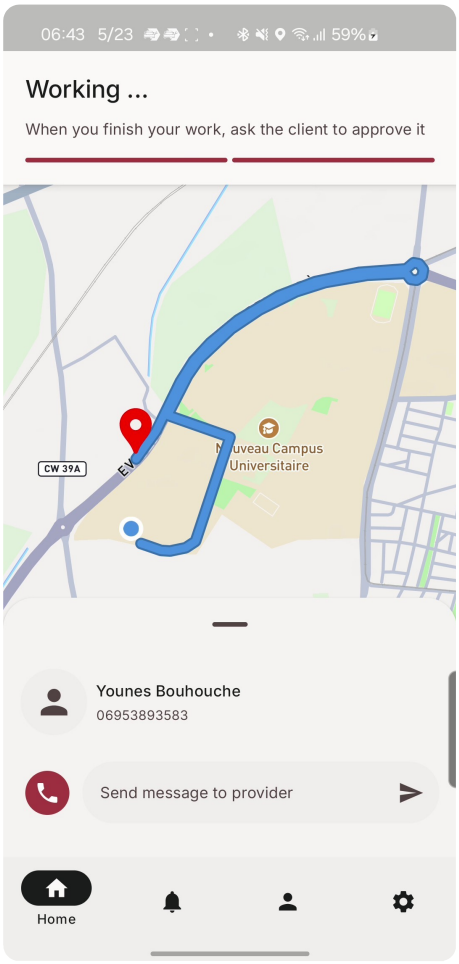


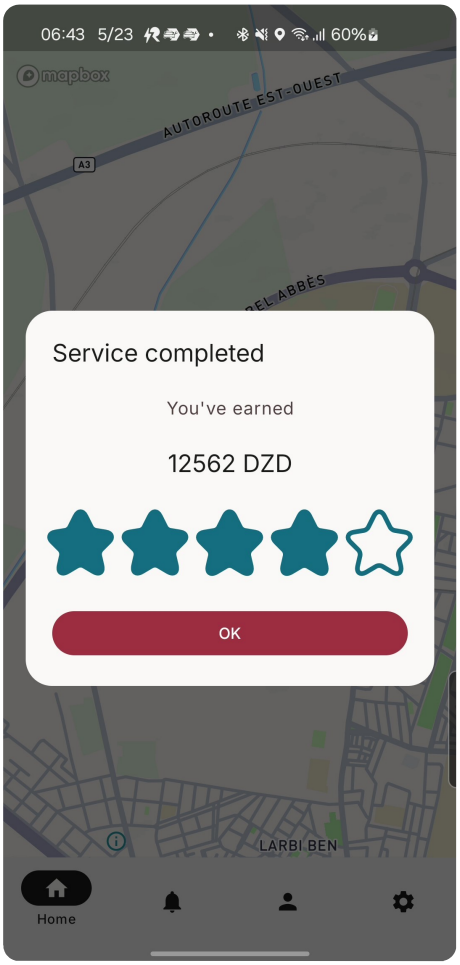
7.2 Provider Mobile App



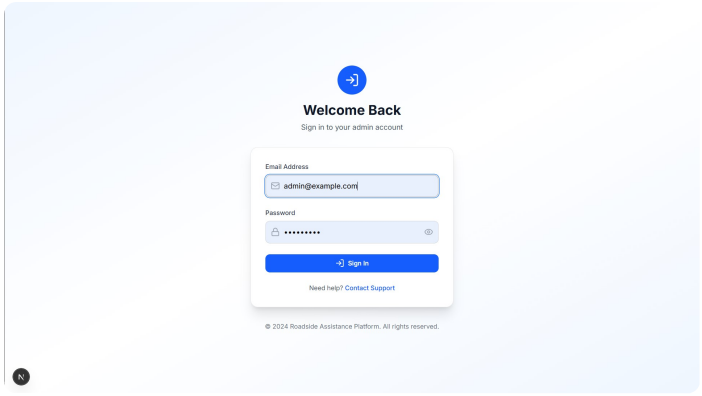


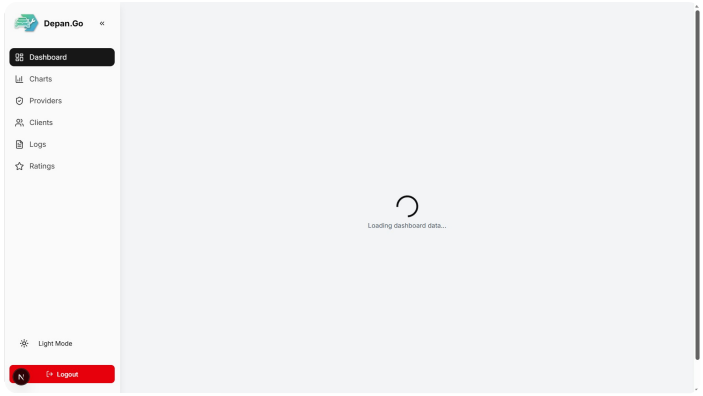


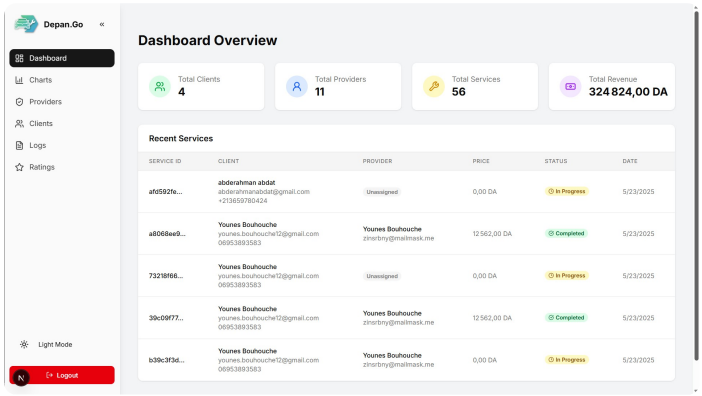


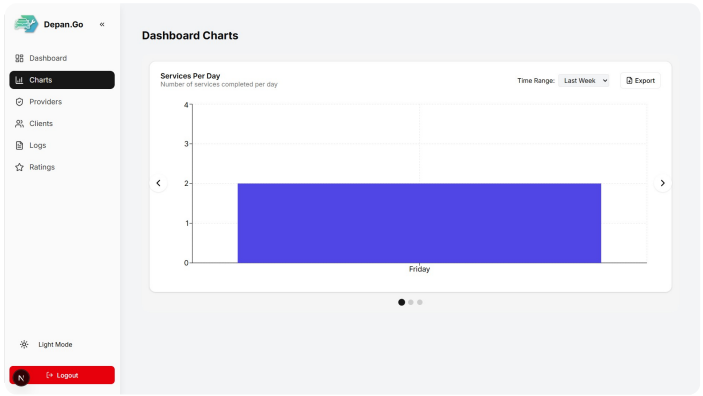


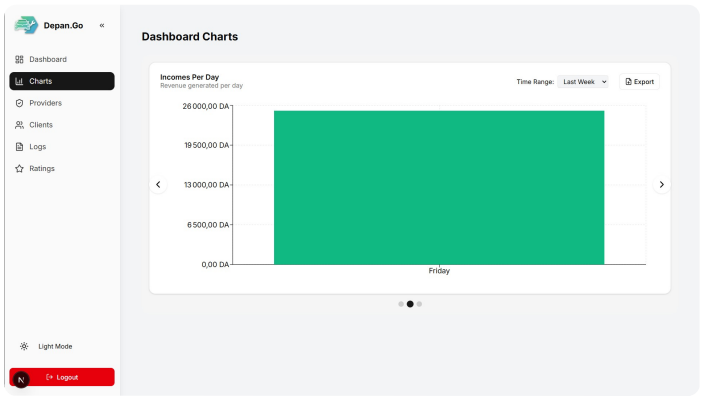
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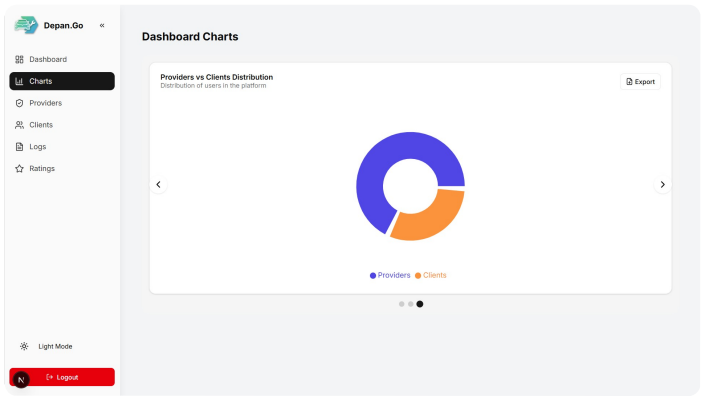

Welcome Back
Sign in to your admin account
Email Address
admin@example.com
Password
Sign In
Need help? Contact Support
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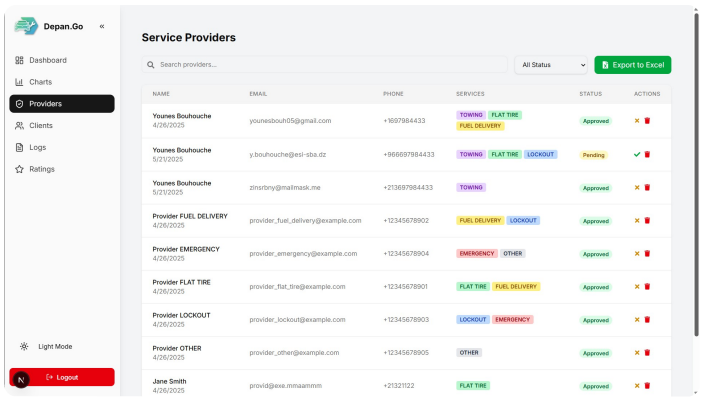

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Dashboard
Charts
Providers
Clients
Logs
Ratings
Light Mode
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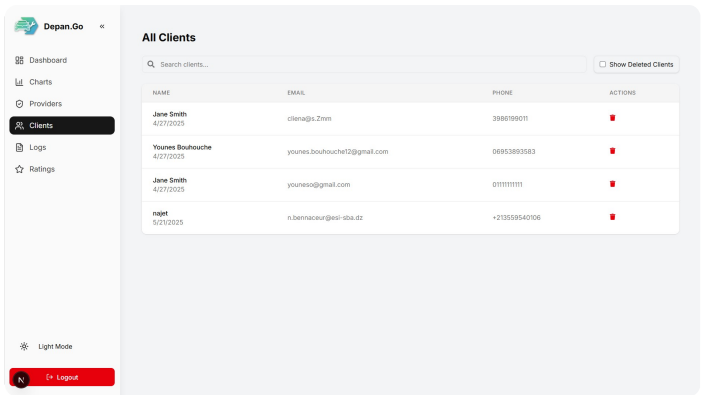

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Dashboard
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Light Mode
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Dashboard Overview
Total Clients
4
Total Providers
11
Total Services
56
Total Revenue
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SERVICE ID
CLIENT
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PRICE
STATUS
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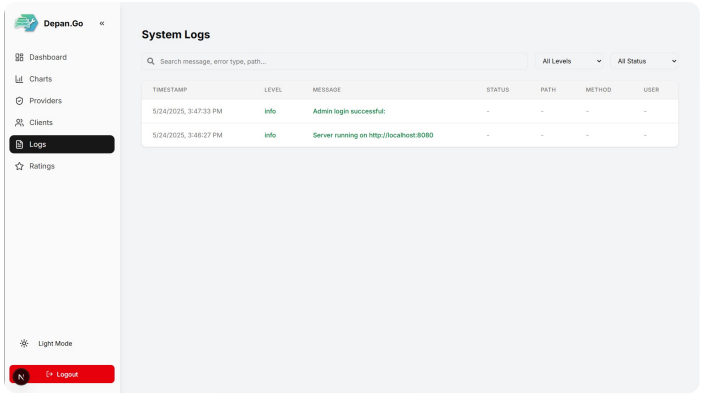

Depan.Go
Dashboard
Charts
Providers
Clients
Logs
Ratings
Light Mode
Logout
Dashboard Charts
Services Per Day
Number of services completed per day
Time Range: Last Week
Export
4
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Friday

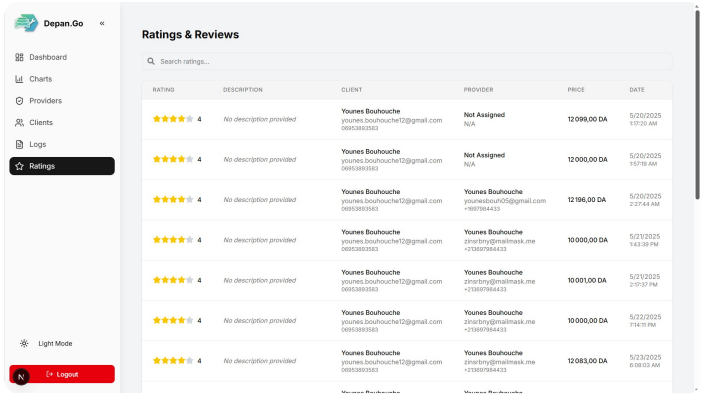

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Dashboard
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Logout
Dashboard Charts
Incomes Per Day
Revenue generated per day
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Dashboard Charts
Providers vs Clients Distribution
Distribution of users in the platform
Export
Providers
Clients


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Dashboard
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Clients
Logs
Ratings
Light Mode
Logout
Service Providers
Search providers...
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Export to Excel
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PHONE
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STATUS
ACTIONS
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FLAT TIRE
FUEL DELIVERY
Approved
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Dashboard
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ACTIONS
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