TECHNICAL PROPOSAL

NRJSOFT PARKING MOBILE APPLICATION

Client: NRJ Soft

Provider: EmeSoft JSC

Table of Contents

1. Executive Summary

NRJ Soft seeks to extend its modern parking ecosystem with a mobile application that enhances driver experience through real-time location intelligence, flexible entry mechanisms, and automated session management.

EmeSoft proposes delivering a React Native (hybrid) mobile application built around two core capabilities:

(1) Secure parking sessions and payment management tightly integrated with NRJ Soft's backend systems.

(2) Intelligent geolocation and smart mapping to help drivers discover and navigate to suitable parking garages.

The mobile app acts as a digital companion for drivers, enabling them to locate nearby eligible garages, navigate using a Smart Map, and initiate parking sessions via ANPR detection or QR-code based entry. QR codes support deep linking to seamlessly transition users into the mobile experience whether the app is already installed or accessed via the web.

2. The Core Workflow

The system supports both garage parking (post-paid) and on-street parking (pre-paid), with flexible payment options based on client requirements.

A. Payment Setup: users can pay using:

- Direct payment (Credit/Debit Card, Apple Pay, Google Pay), or
- Optional NRJ Wallet (Top-Up & Deduct)

B. Parking Discovery: users locate parking via a Smart Map, which displays:

- Nearby garages and on-street parking areas
- Pricing and zone rules
- Supported entry methods (ANPR or QR)

C. Garage Parking (Post-Paid)

- Entry
- Session Monitoring
- Exit & Payment

D. On-Street Parking (Pre-Paid)

- User opens the On-Street Parking screen
- App detects location and available on-street zones (city / zone selectable)
- User selects parking duration from predefined time options
- User pays upfront using wallet or direct payment
- App displays countdown timer and sends expiry reminders before time runs out

E. Subscription & Packages: the system supports optional subscription or package plans, offering special pricing or entitlements for eligible users.
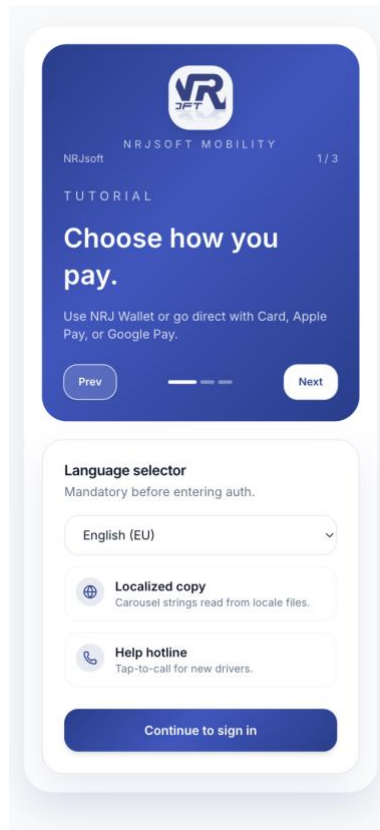
3. Detailed Feature of Mobile App

EmeSoft proposes the following new functions, based on the interactive layout and requirement specifications.

Click here to access interactive prototype   Scan to access on mobile:

3.1. Tutorial & Onboarding

As payments are central to the NRJ Soft mobility experience, the onboarding flow provides clear and immediate guidance to help users understand available payment options and how parking sessions are initiated.
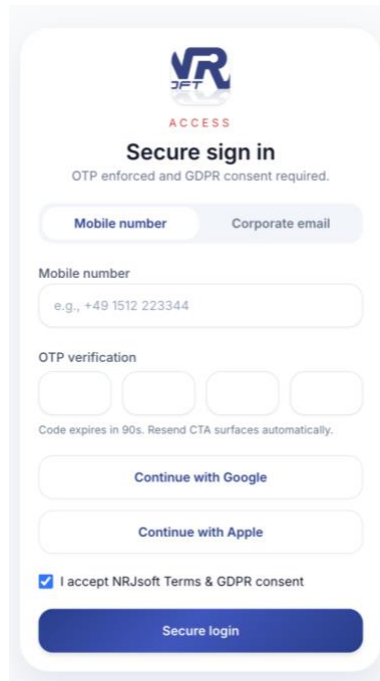
Features

- **Branding & Visual Identity**: Fully aligned with NRJ Soft branding and styling, reinforcing trust and product recognition from the first launch.

- **Quick Tutorial Carousel**: A short, swipeable tutorial introduces the core usage flow

  - Choose how you pay - Use NRJ Wallet or pay directly with Card, Apple Pay, or Google Pay.

- o Enter any NRJ parking zone - Garages or on-street areas supported by NRJ Soft.
- o Pay seamlessly - Automatic or manual payment based on your selected method.

- **Language Selector**: Mandatory language selection before authentication, ensuring accessibility and compliance for EU multi-language markets.

- **Localized Content**: Tutorial copy and onboarding text are loaded from localized resources, allowing easy extension to additional languages.

- **Help Hotline Access**: One-tap access to a support hotline for new drivers requiring immediate assistance.
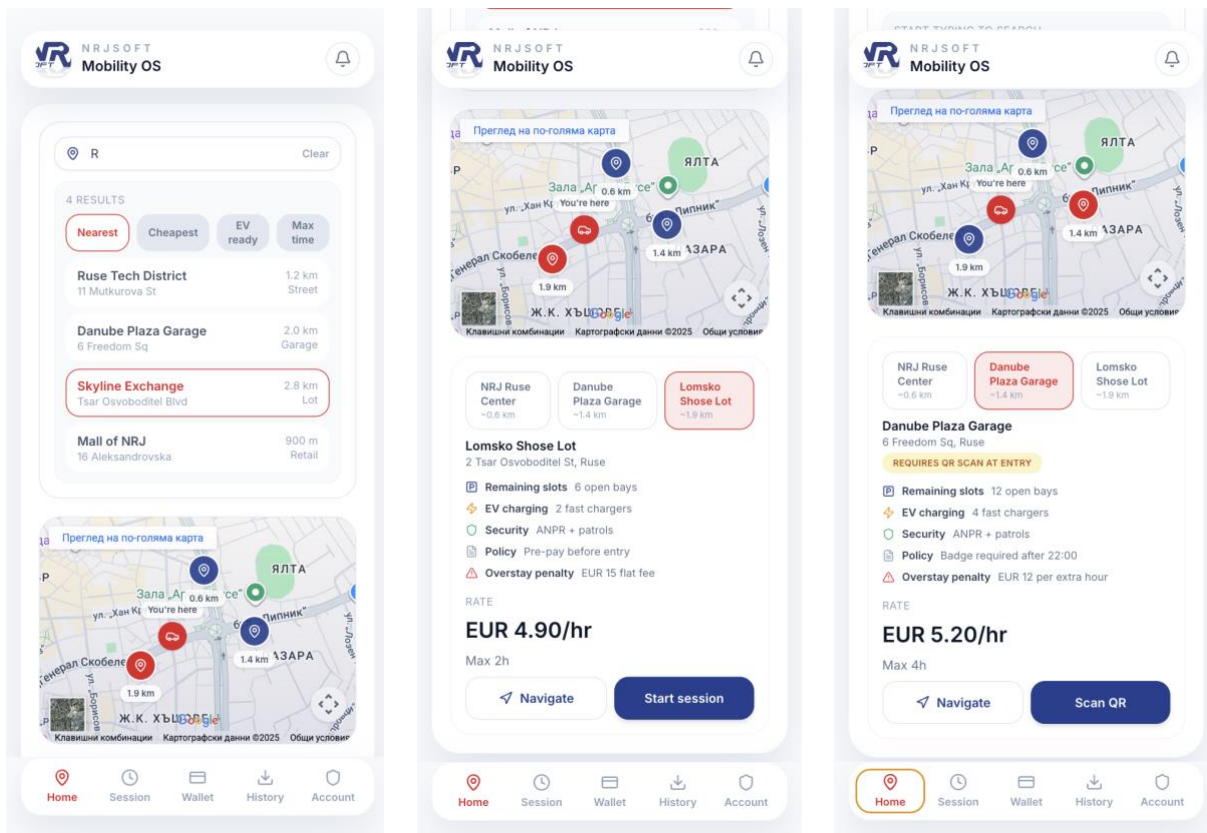
3.2. Authentication Screen

The Authentication Screen provides a secure and streamlined entry point into the application. It enables users to log in or register with minimal friction while ensuring compliance with security standards.

Features:

- Input Fields: Mobile Number (Primary ID) or Email.

- OTP Verification: SMS code entry for security.

- Social Login: Google/Apple Sign-in (for speed).

- T&C Checkbox: GDPR compliance consent.

3.3. Home / Smart Map

All information in this proposal is confidential and must be handled in accordance with NRJSoft and EmeSoft privacy policies.

6
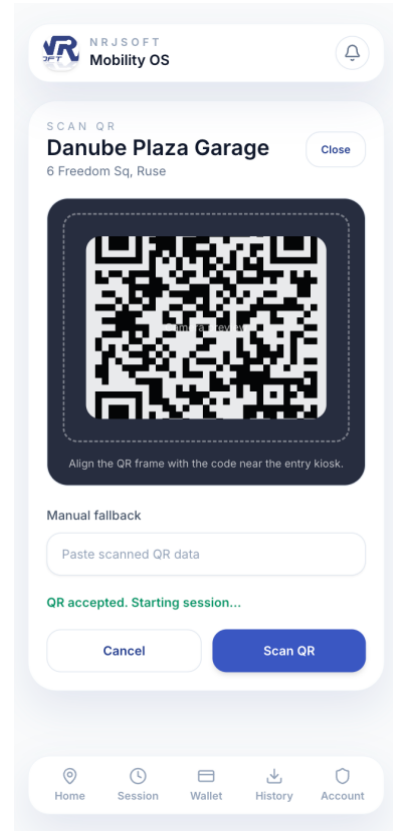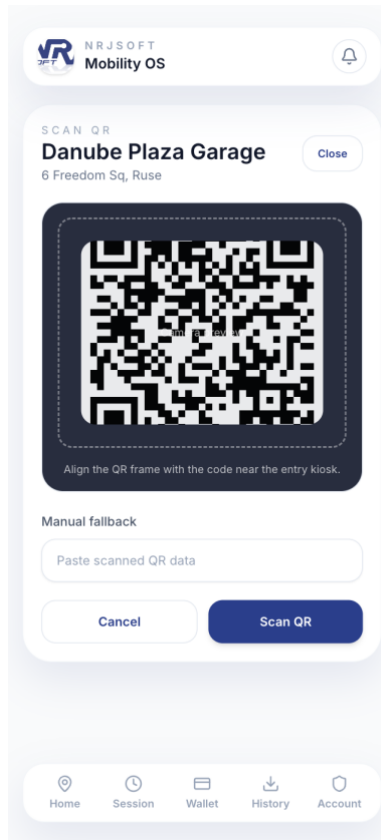
- **Goal:** The Smart Map is the main landing screen, giving users instant location awareness and showing nearby parking garages with real-time availability, distance, and pricing, answering: "Where am I?", "Where can I park?", "How much does it cost?"

- **Features:**

  - Real – Time User Location: A GPS <u>dot </u>shows the user's current position and dynamically updates as they move.
  - Parking Garage Pins: Pins on the map represent nearby garages with live status indicators. Each pin displays an approximate walking/driving distance.
 - Parking Cards Carousel: A horizontal list shows nearby garages with quick-glance info:

All information in this proposal is confidential and must be handled in accordance with NRJSoft and EmeSoft privacy policies.

7

- Parking Location name
- Distance
- Availability
- Entry method (ANPR / QR Code)

App allows Users to swipe between garages before selecting.

o Garage Detail Bottom Sheet: When a garage is selected, a draggable sheet displays key information:
  - Remaining slots
  - Hourly rate & max time
  - EV chargers
  - Security features
  - Pricing rules & policies
  - Entry method tag:
    - ANPR: Automatic entry
    - QR: Requires QR scan at entry
o Action Button (Contextual): The primary button adapts to the garage type:
  - Start Session (ANPR): Opens the Session screen; the actual session begins automatically when the ANPR camera detects the vehicle.
  - Scan QR (QR-enabled garages): Opens the QR scanner; session begins only after a successful QR scan at the entry point.
o Search Bar: Search for streets, destinations, or specific garages; suggested results appear instantly.

3.4 On-Street
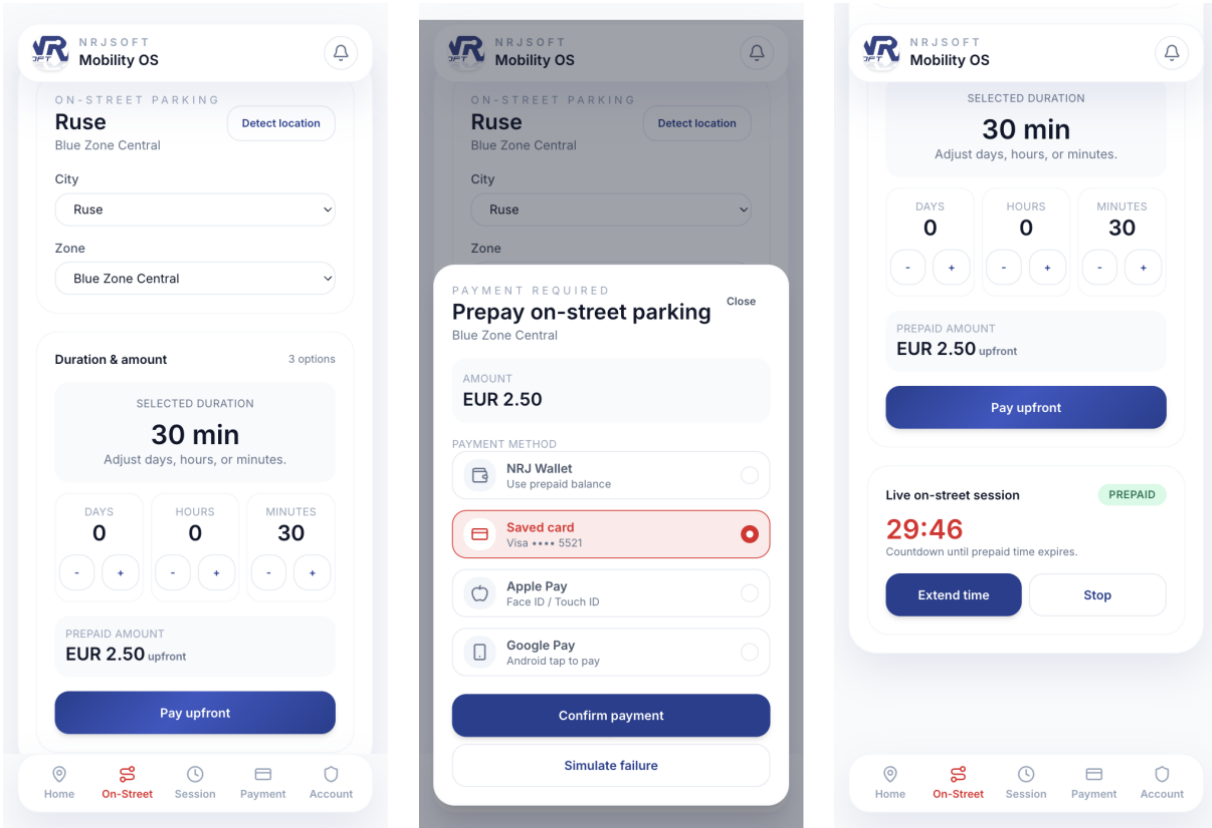
- **Goal:** Enable drivers to quickly start and manage pre-paid on-street parking by selecting the correct city and zone, choosing a parking duration, and completing payment upfront using their preferred payment method.
- **Features**
  - **Location & Zone Detection**: The app detects the user's current location and automatically suggests the applicable city and on-street parking zone. Users can manually change the city or zone when required.
  - **Zone-Aware Rules & Pricing**: Parking availability, pricing, and permitted durations are dynamically loaded based on the selected on-street zone, ensuring compliance with local regulations.

- o **Duration Selection**: Users select parking time using predefined duration options (minutes, hours, or days) via simple "+ / −" controls. Available options may vary by zone.
- o **Upfront Payment (Pre-Paid Model)**: On-street parking is charged before the session starts. The total amount is calculated instantly based on the selected duration and zone.
- o **Flexible Payment Methods:** Users can pay using:

    - NRJ Wallet (prepaid balance)

    - Saved card

    - Apple Pay

    - Google Pay

- o **Payment Confirmation Modal**: A clear confirmation screen summarizes the zone, duration, and payable amount before finalizing payment.
- o **Active Countdown & Notifications**: After successful payment, the app displays a live countdown timer and sends notifications shortly before the prepaid time expires, prompting users to extend if needed.

3.5. Payment
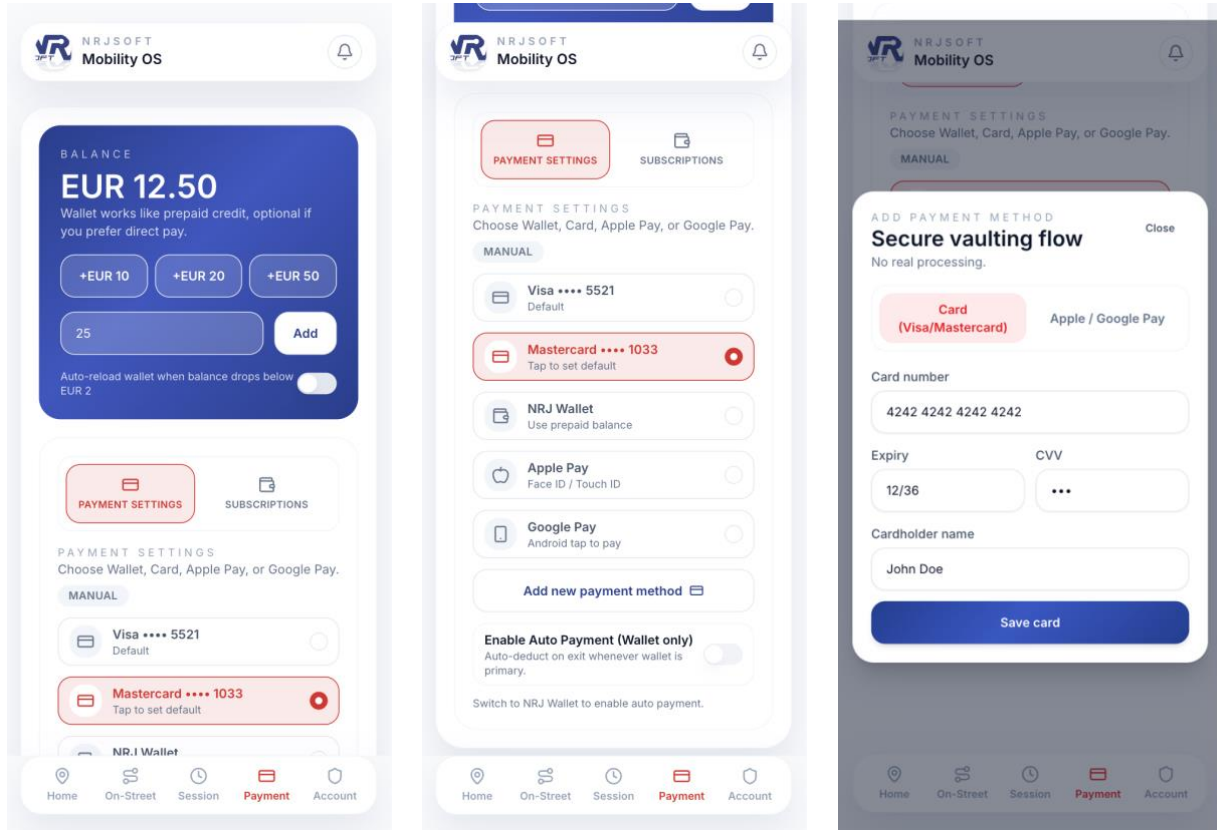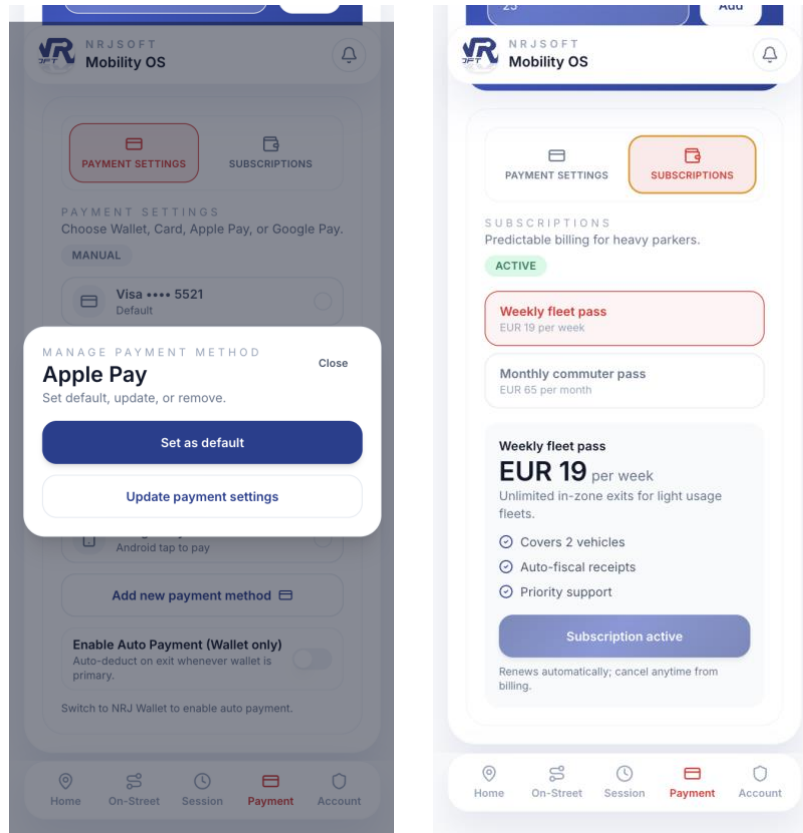
- **Goal:** Provide users with a clear, flexible, and secure way to manage payments, allowing them to choose between direct payment methods, an optional prepaid wallet, or subscription plans based on their parking needs.
- **Features**
    - **Wallet Balance & Top- Up (Optional)**: Displays current NRJ Wallet balance and allows quick top-ups using preset amounts or a custom value. The wallet acts as prepaid credit and is optional for users who prefer direct payment.
    - **Auto-Reload (Wallet Only)**: Optional auto-reload can be enabled to top up the wallet automatically when the balance falls below a defined threshold.
    - **Payment Method Selection**: Users can choose and set a default payment method.

- Saved cards (Visa / Mastercard)
- NRJ Wallet
- Apple Pay
- Google Pay

o **Manual vs Auto Payment Control**: Direct payments are processed manually per session. Automatic payment on exit is available only when the wallet is selected as the primary payment method.

o **Secure Card Vaulting**: Payment cards are securely vaulted for future use. No sensitive card data is stored directly within the application.

o **Subscription Management**: Optional parking subscriptions (e.g. weekly or monthly passes) provide predictable billing and benefits for frequent or fleet users.

o **Clear Status & Defaults**: The UI clearly indicates the active payment method, default selection, and applicable rules for auto-payment or subscriptions.

3.6. Active Parking Session
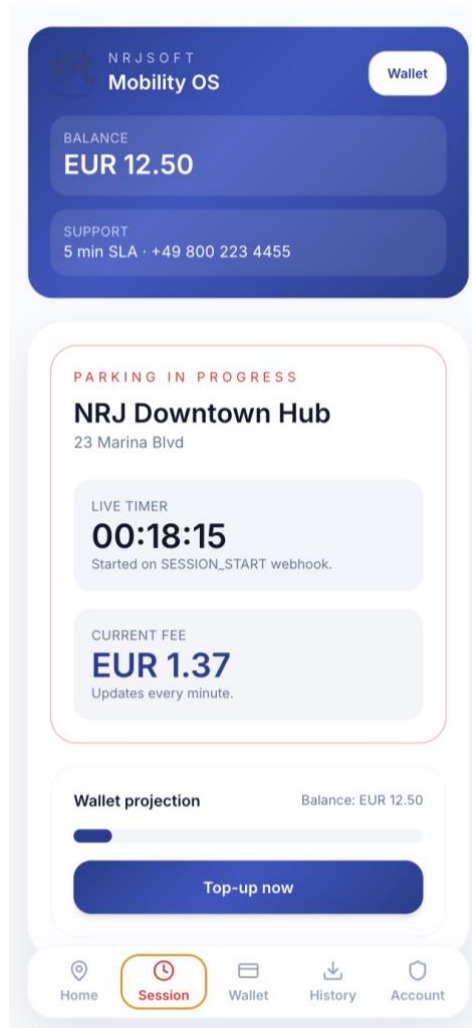
- **Trigger:** This screen automatically appears (or takes over the home screen) when the API sends a SESSION_START webhook.

- **Features:**

  o Status Header: "Parking in Progress - [Zone Name]"

  o Live Timer: HH:MM:SS (Counting up since entry).

  o Live Cost: "Current Fee: €4.50" (Updates every minute).

- o Wallet Projection:

    - Visual Bar: Shows [Current Cost] vs [Wallet Balance].

    - Warning UI: If [Current Cost] is within €1.00 of [Wallet Balance], bar turns Orange/Red.

- o Top-Up Now Button: Emergency button to add funds without leaving the screen.

- o Notification:

    - 5 minutes before the prepaid balance runs out (or reservation ends), App triggers a loud notification.

    - Display a quick-action pop-up that allows users to extend their parking session

3.7. Account & Settings
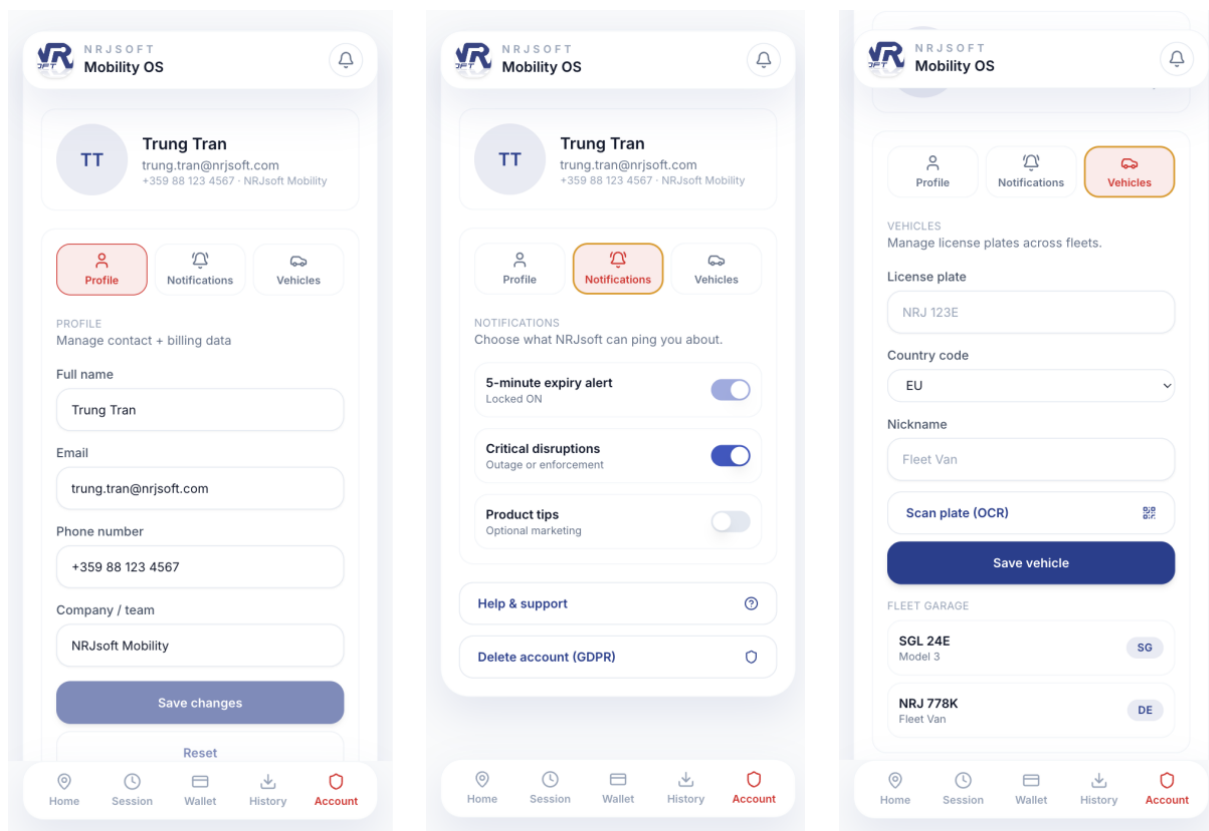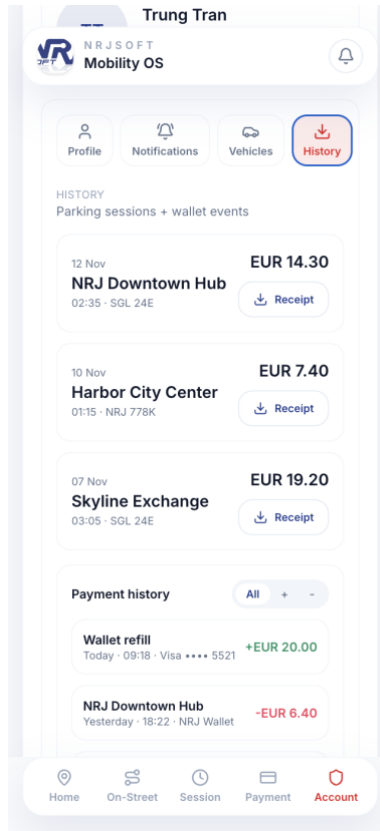
- **Goal:** Allow users to manage personal information, notifications, vehicles, and account preferences in one place, ensuring accuracy, compliance, and a personalized parking experience.
- **Features**
  - **Profile Management**: Users can view and update personal and billing-related details such as full name, email, phone number, and company or team information.
  - **Notification Preferences:** Users control which notifications they receive, including.
    - Parking expiry alerts (e.g. 5-minute warning)
    - Critical disruptions (outages or enforcement-related events)
    - Optional product or service updates

- o **Vehicle Management**: Users can add and manage multiple vehicles by license plate, country code, and nickname.
- o **Activity & Payment History**: A consolidated history view shows past parking sessions, wallet events, and payments, with downloadable receipts for transparency and record keeping.
- o **Help & Account Controls**: Quick access to help and support, along with account deletion functionality in compliance with GDPR requirements.

3.8. Notifications.
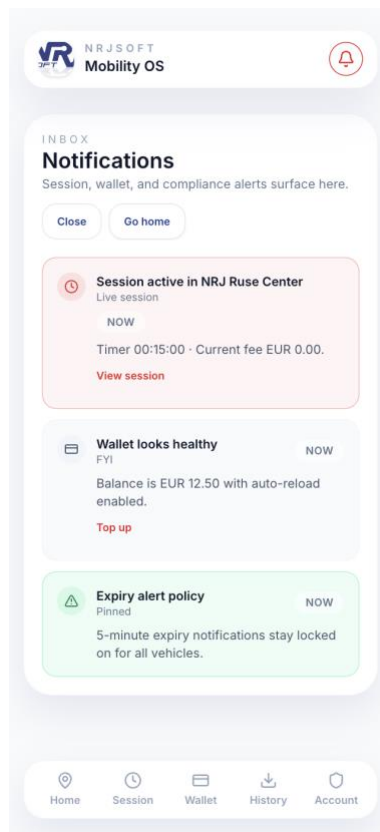
- • **Goal**

The Notification Inbox centralizes all important updates related to parking sessions, wallet status, and compliance policies. It ensures users never miss critical information, helping them stay aware of active timers, balance levels, and system-wide alerts.

- **Features**
    - Unified Notification Center: A single place where session, wallet, and policy alerts are surfaced.
    - Notification Types
        - Live Session Alerts: Active parking session details (timer, current fee) with quick access to *View Session*.
        - Wallet Alerts: Balance status, auto-reload information, and a *Top up* shortcut.
        - Compliance / Policy Alerts: Pinned notifications such as expiry rules or mandatory reminders.
    - Real-Time Indicators: "NOW" timestamp shows that updates are recent and relevant.
    - Action Buttons
        - Close - dismiss the inbox.
   - Go home - return to the main Smart Map.

4. Technical Architecture & Integration

Technology Stack

- Mobile Framework: React Native (Hybrid).

- Maps Service: Google Maps SDK (optimized for geolocation accuracy).

- Notification Service: Firebase Cloud Messaging (FCM) for high-priority delivery.

- Backend: Integration with NRJsoft APIs.

- Platform: iOS & Android

Data Flow

4.1. Onboarding & Authentication
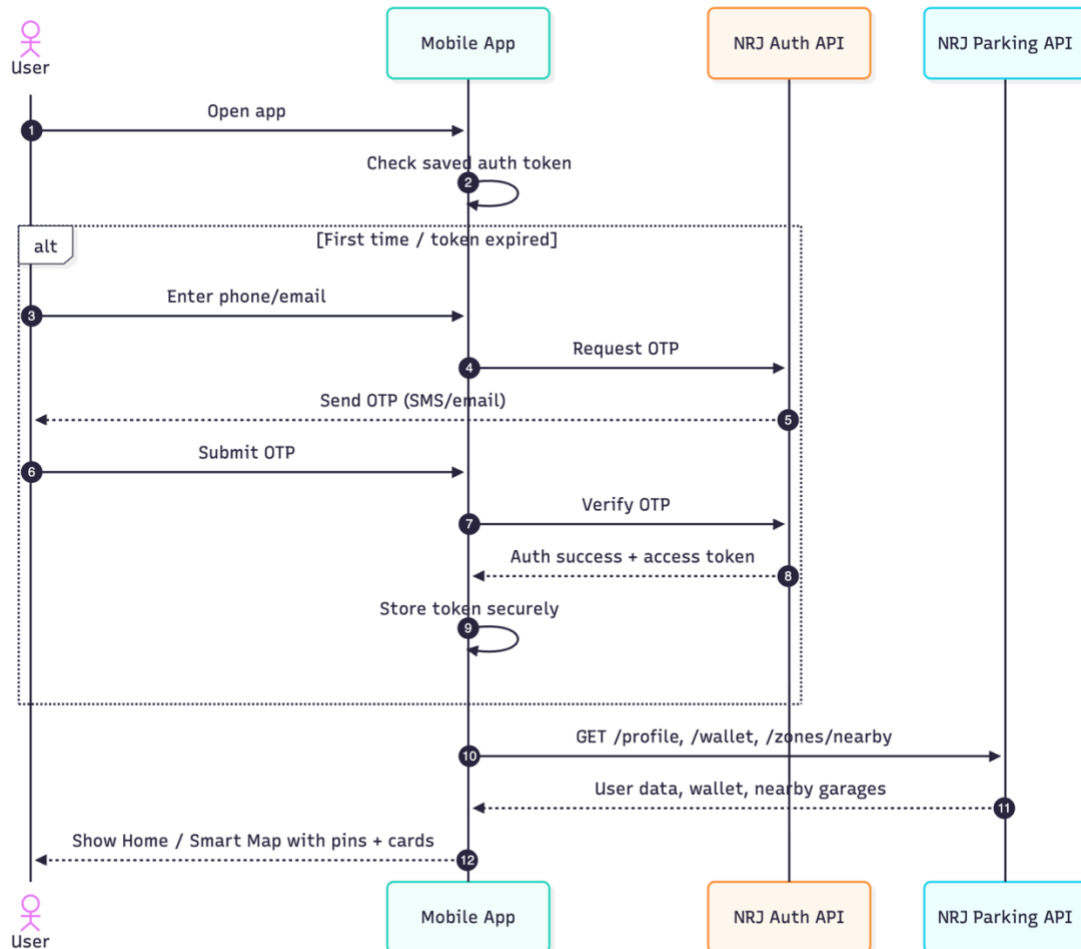
User opens the app, authenticates via OTP (if needed), and the app loads profile, wallet, and nearby parking data to render the Smart Map with pins and cards.
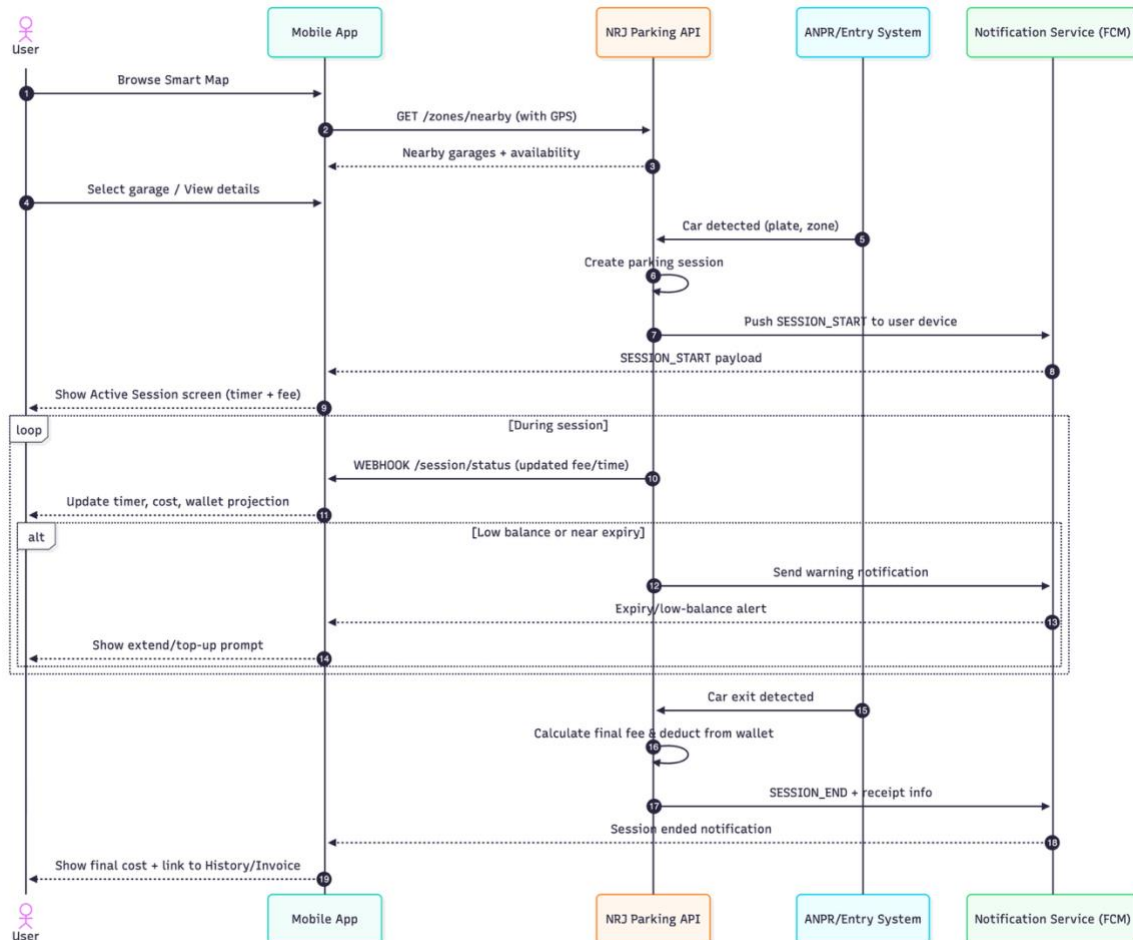
APIs

- POST /auth/otp-request - request OTP for phone/email.

- POST /auth/otp-verify - verify OTP and return access token + refresh token.

- GET /me - fetch user profile and basic settings.

- GET /wallet - get current wallet balance and reload settings.

- GET /parking/nearby?lat=&lng=&radius= - list nearby garages with distance, availability, and pricing.

- (Optional) POST /devices/register - register device push token for notifications.

## 4.2. Parking Session Lifecycle

The user finds a garage on the Smart Map, enters the parking facility, ANPR creates/updates the session in the backend, and the app shows live timer, cost, warnings, and final receipt when the car exits.

APIs

- GET /parking/nearby?lat=&lng= - refresh available garages.

- GET /parking/{garageId} - detailed info for selected garage (rates, EV, security).

- GET /sessions/active - get current active session for the user/vehicle.

- GET /sessions/{sessionId} - detailed session state (timer, fee, zone rules).

- POST /sessions/{sessionId}/extend - extend session / max time (if allowed).

- GET /notifications - load notification list (mirrors inbox screen).

4.3. Payment

### 4.3.1. Payment with cards/Apple pay/Google pay
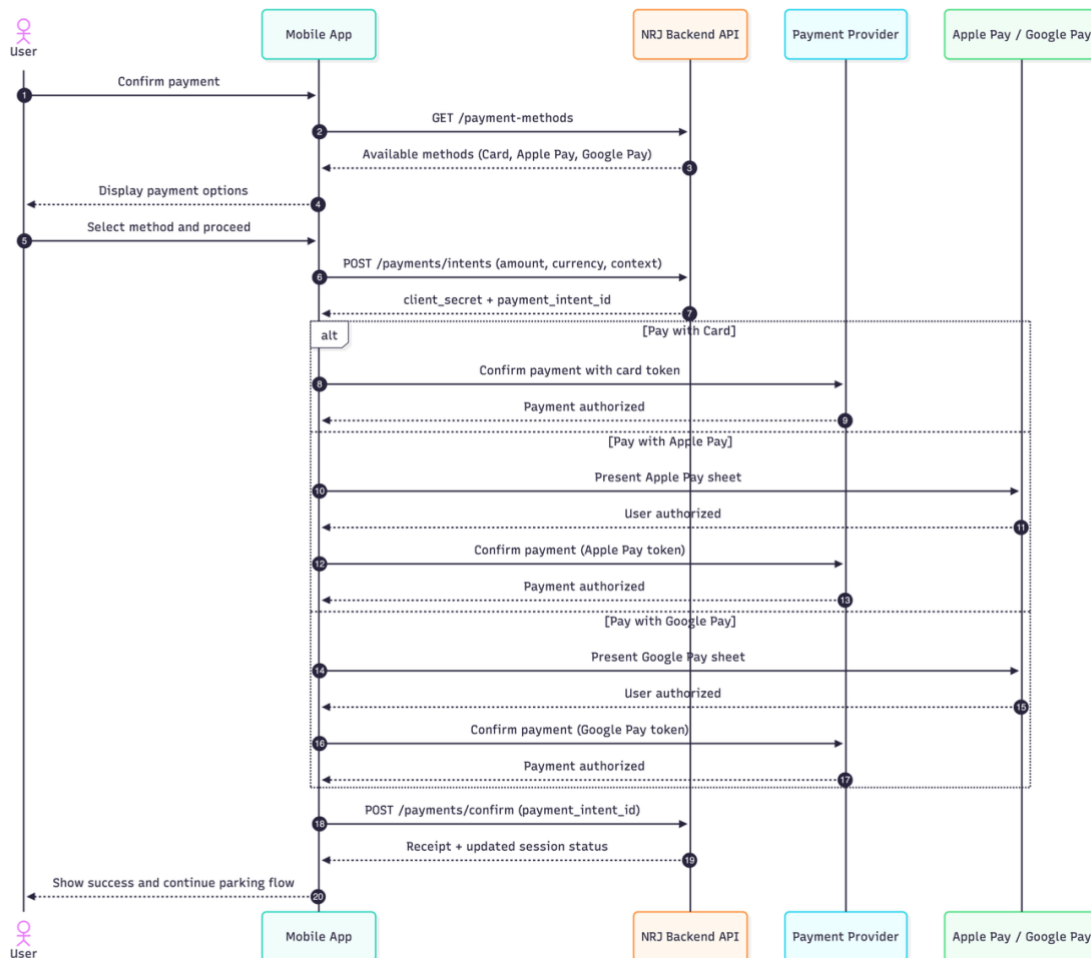
When a payment is required (on-street prepay or manual garage payment), the mobile app presents the available direct payment methods. After the user confirms a method (card, Apple Pay, or Google Pay), the app requests the backend to create a payment intent. The payment is then authorized via the selected provider and confirmed with the backend.

APIs:

- GET /payment-methods - Retrieve available payment methods and defaults
- POST /payments/intents - Create a payment intent for the given amount and context
- POST /payments/confirm - Confirm successful payment and finalize the transaction
- POST /payments/cancel - Cancel or fail a payment attempt

4.3.2 Wallet (Top-up)
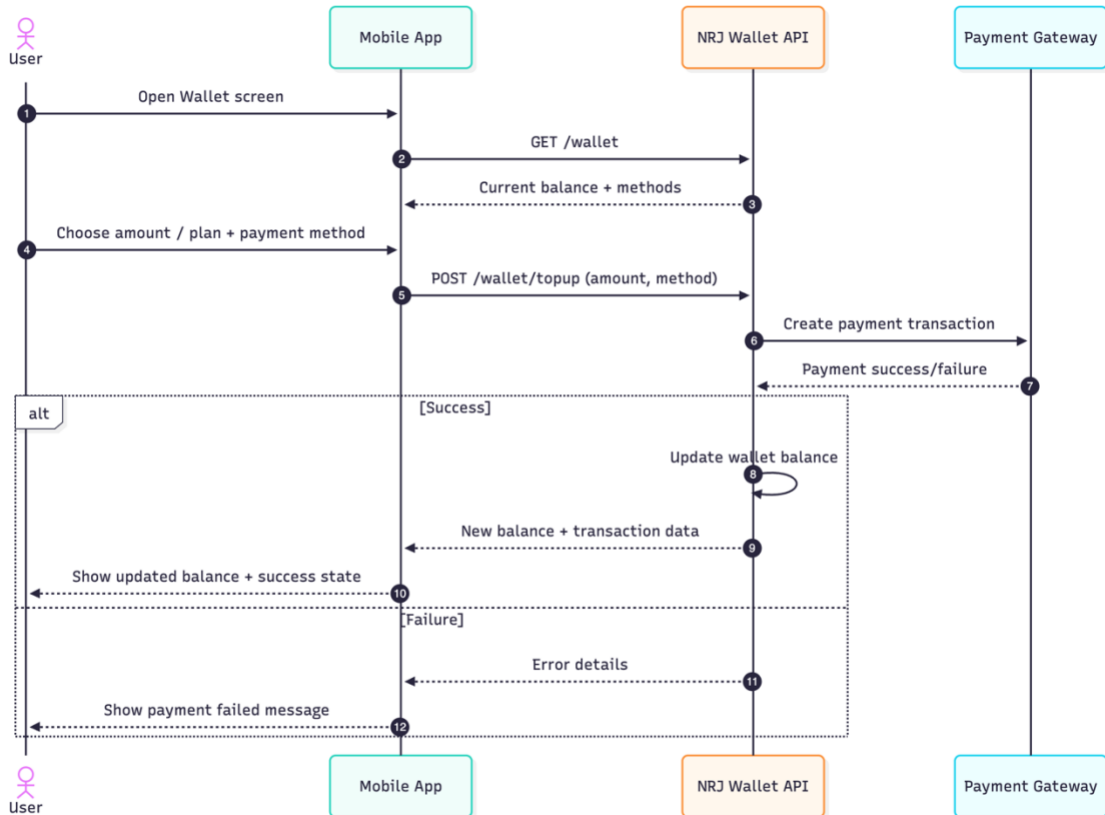
From the Wallet tab the user views balance, selects a top-up amount, is redirected/hosted to pay via the payment gateway, and the wallet balance is updated once payment is confirmed.

APIs

- GET /wallet - current balance, auto-reload status, min/max limits.

- GET /wallet/transactions - recent top-ups and parking charges.

- POST /wallet/topup-intent - create a top-up intent and receive payment URL / payment token.

- GET /wallet/topup-status?intentId= - poll status (success/failed) after redirect.

4.4. On-street
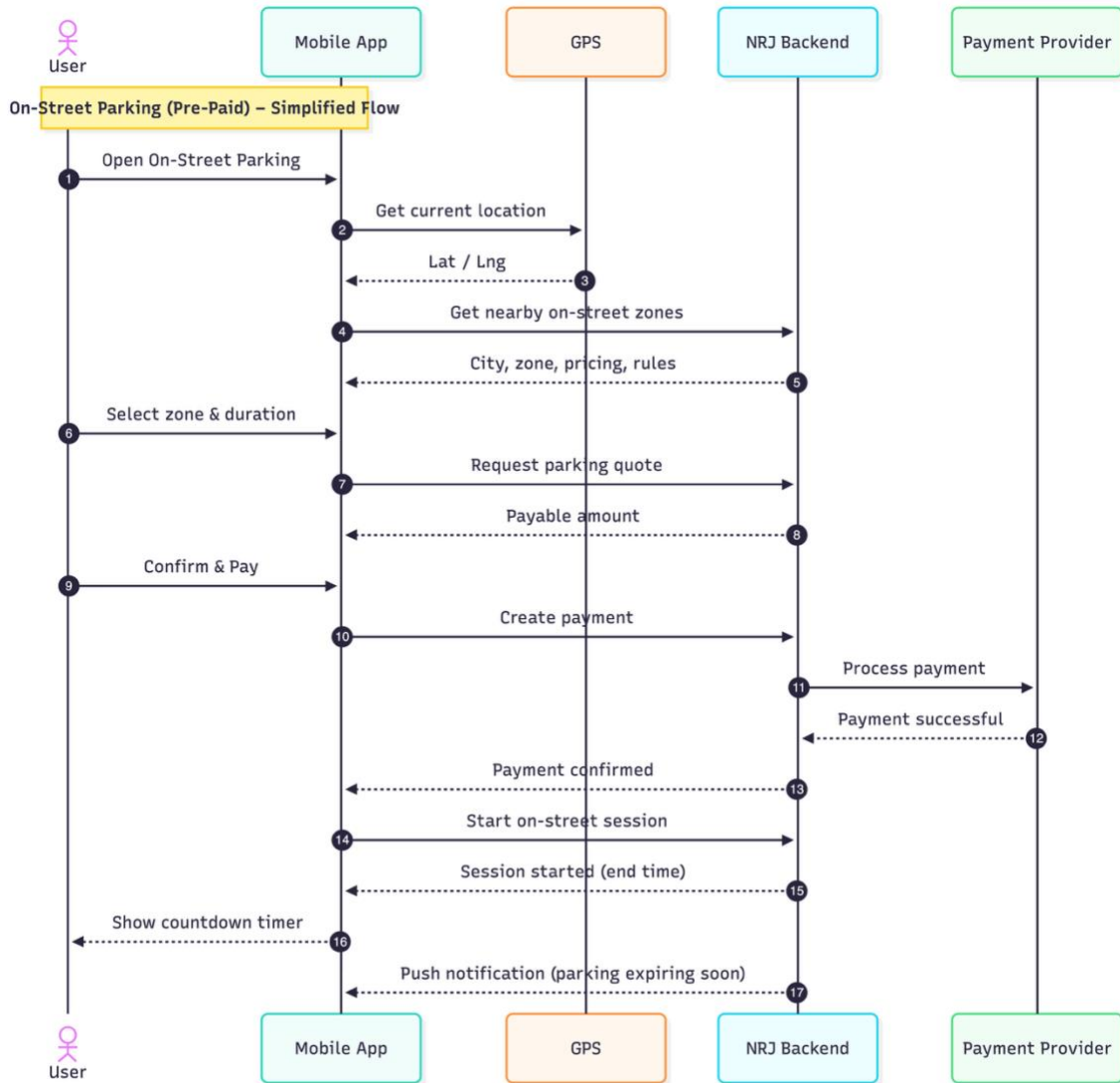
When a user opens the On-Street Parking screen, the app detects the current location and retrieves applicable on-street zones with pricing and rules. The user selects a zone and parking duration, and the app requests a price quote from the backend. After the user confirms and completes upfront payment using a supported payment method, the backend starts the on-street parking session. The app displays a live countdown timer, and reminder notifications are sent shortly before the prepaid parking time expires.

APIs

Location & Parking

- GET /onstreet/zones - Retrieve nearby on-street parking zones based on user location

- GET /onstreet/zone-detail - Retrieve zone rules, pricing, and allowed durations

- POST /onstreet/quote - Calculate payable amount for selected zone and duration

- POST /onstreet/sessions - Start on-street parking session after successful payment

Payments

- POST /payments/intents - Create payment request for upfront parking fee

- POST /payments/confirm - Confirm successful payment

Notifications

- Push notifications via **FCM / APNs** - Send expiry reminders before parking time ends

5. Development Roadmap

Month	Key Objectives	Development Scope
Month 1	**Foundations, Authentication & Core Navigation**	**Project Setup** • Mobile codebase initialization (React Native) • GitHub repository & CI/CD (Android & iOS) • Environment configuration & API integration framework **Authentication & Onboarding** • OTP request & verification screens • Secure token storage & refresh • Language selection (EU-ready)

		• Device & push token registration (FCM) **Navigation Shell** • Bottom tabs: Home / Session / Payment / History / Account • Notification entry point (badge & routing) **Design System** • NRJ Soft branding (colors, typography) • Shared UI components & spacing system
Month 2	**Smart Map, Sessions & Payments (Core Experience)**	**Smart Map** • Map rendering (Google Maps / Apple Maps) • User GPS location • Garage & on-street parking pins • Parking cards carousel • Garage detail bottom sheet • External navigation deep links **Garage Parking Sessions (Post-Paid)** • Session start handling (ANPR / QR deep link) • Active session screen (timer, estimated cost) • Backend-driven session updates • Session warnings & reminders **Payments - Direct Payment** • Payment screen (Card / Apple Pay / Google Pay) • Payment intent creation & confirmation • Manual payment before exit **Wallet (Optional)** • Wallet balance screen • Top-up flows

		• Auto-reload toggle **History (Phase 1)** • Parking session list • Basic payment & receipt view
Month 3	**On-Street Parking, Compliance & Stability**	**On-Street Parking (Pre-Paid)** • Dedicated on-street parking screen • City & zone selection • Duration selector (+ / −) • Upfront payment (wallet or direct) • Countdown timer & expiry notifications **Notifications** • Notifications inbox • Categories & deep links to app screens **Account & Settings** • Profile management • Vehicle management (plates) • Notification preferences • Payment preferences & defaults **Compliance & UX Polish** • Policy banners & mandatory notices • Error & edge-case handling • Map & session performance optimization • Loading states & micro-interactions **QA-Ready Build** • Internal testing build for UAT

6. Estimation

Module	Function	Pricing (USD)

Tutorial & Onboarding	• NRJ Soft branding • Quick usage carousel • Payment options overview • Language selection (EU-ready) • Support / help entry point	
Authentication Screen	• OTP request & verification • Phone number / email login • Secure token handling • Device registration • Push token registration	
Home / Smart Map	• User location (GPS) • Garage & on-street parking pins • Parking cards carousel • Pricing & policy badges • Zone detail bottom sheet • External navigation deep links	
On-street	• Location-based zone detection • City & zone selection • Duration selector (+ / −) • Upfront payment trigger • Active countdown timer • Expiry reminder alerts	
Payment	• Payment method selection Card / Apple Pay / Google Pay • Optional wallet balance • Auto-payment toggle (wallet only) • Subscription plans	
Active Parking Session	• Active parking session view • Session timer & cost estimate • Entry method indicator (ANPR / QR) • Extend / pay actions • Session status updates	
Parking History & Invoice	• Session list • Filter • Session detail • PDF receipt download / share	

All information in this proposal is confidential and must be handled in accordance with NRJSoft and EmeSoft privacy policies.

	• Wallet transaction history	
Account & Settings	• Profile information • Vehicle management (No OCR) • Notification preferences • Payment preferences • Language & app settings • Account deletion (GDPR)	
Notifications	• Notifications inbox • Expiry & session alerts • Payment status alerts • Deep links to app screens • Critical system notices	
	TOTAL	
	DISCOUNT	
	GRAND TOTAL	

7. Go-Live & App Publishing

NRJSoft has confirmed that official developer accounts already exist on both the Apple App Store and Google Play Store. On EmeSoft's side, we also maintain active developer accounts for both platforms and have extensive experience supporting clients through the full publishing and compliance process. This ensures a smooth and efficient go-live phase with minimal friction.

Scope of Go-Live Support

6.1. Build Signing & Store Configuration

- Prepare production builds for iOS (IPA) and Android (AAB/APK).

- Configure bundle identifiers, app icons, launch screens, certificate signing, and provisioning profiles.

- Set up App Store Connect and Google Play Console entries (if not already created).

6.2. Compliance, Policies & Metadata

- Assist NRJSoft in preparing required store metadata:

    o App name, description, screenshots, preview video (optional).

    o Category, age rating, region availability.

    o Privacy policy and data usage disclosures.

- Ensure compliance with:

    o Apple's App Store Review Guidelines

    o Google Play Policy Requirements

6.3. Internal & Beta Distribution

- Configure TestFlight for iOS internal testing.

- Configure Google Play Internal / Closed Testing tracks.

- Support NRJSoft stakeholders in validating build behavior on real devices.

6.4. App Review & Publishing

- Submit the final builds for review on both platforms.

- Address any review feedback or required adjustments.

- Coordinate timing of simultaneous release across iOS and Android.

6.5. Post-Publish Assistance

- Support NRJSoft in monitoring:

    o Crash reports

    o Performance logs

8. Deliverables

Upon completion of the development phase, EmeSoft will provide NRJ Soft with the following deliverables:

- **Release Notes & Test Reports**

  Including executed test cases, bug reports, resolutions, and quality validation results.

- **User Guide & Configuration Documentation**

  Covering application usage, setup instructions, and any required system configurations.

- **Production-Ready Application Builds**

  Android (AAB/APK) and iOS (IPA) builds prepared for publishing.

- **Complete Source Code**

  Full project source code, including frontend, backend integration modules, and related assets.