# Rally Mapper App: Functional and Technical Specification

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\*\*Product Name:\*\* Rally Mapper  
\*\*Version:\*\* v1.0 (as of June 2025)  
\*\*Platform:\*\* Web application (iPad-optimized)  
\*\*Tech Stack:\*\* React, Vite, TailwindCSS, Supabase, Google Maps API  
\*\*Deployment:\*\* Netlify (https://rallymapper.netlify.app)

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## Executive Summary  
Rally Mapper is a lightweight, offline-capable rally route mapping application designed for use in real-time car rally environments. The app enables navigators or recorders in rally vehicles to record and review route data with high precision using GPS tracking, structured waypoint tagging, and export-ready formats. Built for performance, reliability, and extensibility, Rally Mapper is an ideal solution for motorsport event organizers, rally teams, and map data vendors.

This app has been developed with field operability, user-friendly controls, and integration with existing mapping ecosystems (such as GPX/KML/JSON formats) as key priorities. The app is production-ready and suitable for investors or clients seeking tools to digitize and modernize rally data collection.

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## Functional Overview

### Core Features  
1. \*\*Live GPS Tracking\*\*  
 - Continuously records geolocation coordinates.  
 - Calculates distance from section start.

2. \*\*Waypoint Capture\*\*  
 - Logs a waypoint with current time, distance, GPS coordinates.  
 - Supports POI labels and voice-to-text notes.

3. \*\*Custom Icon Selection\*\*  
 - Choose from a predefined library of rally-standard icons.  
 - Categorized by On Track, Safety, Symbols, and Abbreviations.

4. \*\*Section Management\*\*  
 - Create, name, and end route sections.  
 - Waypoints are grouped per section for easy export and review.

5. \*\*Map Integration\*\*  
 - Embedded Google Map with real-time centering.  
 - All waypoints plotted with detailed popups.

6. \*\*Route Replay\*\*  
 - Animate a marker moving through waypoints in sequence.  
 - Simulates the route for post-run review.

7. \*\*Data Export\*\*  
 - Export sections as:  
 - \*\*JSON\*\* for storage or reuse.  
 - \*\*GPX\*\* for GPS devices and apps.  
 - \*\*KML\*\* for Google Earth and GIS tools.  
 - Files saved locally on iOS-compatible devices.

8. \*\*Offline Functionality\*\*  
 - Saves unsynced data in `localStorage` when offline.  
 - Syncs to Supabase once internet is available (future release).

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## Technical Specification

### Front-End  
- \*\*Framework:\*\* React 18  
- \*\*Bundler:\*\* Vite  
- \*\*Styling:\*\* TailwindCSS  
- \*\*UI Features:\*\*  
 - Sticky map view  
 - Touch-optimized buttons  
 - Responsive layout for iPad (10")

### Mapping  
- \*\*Provider:\*\* Google Maps JavaScript API  
- \*\*Features:\*\*  
 - Dynamic markers  
 - Polyline routes  
 - Map panning and zoom  
 - Replay mode using interval timers

### Data Management  
- \*\*State Storage:\*\* useState, useEffect, useRef  
- \*\*Persistent Storage:\*\*  
 - `localStorage` for offline waypoint caching  
 - Supabase integration planned for real-time sync

### Export Modules  
- \*\*File Types:\*\* JSON, GPX, KML  
- \*\*Download Mechanism:\*\* Blob creation + anchor injection  
- \*\*Mobile Compatibility:\*\* Verified on iOS Safari (iPad)

### Key Components  
- `App.jsx`: Core app logic, section handling, map display, replay toggle.  
- `ReplayRoute.jsx`: Animated marker replay system based on waypoints.  
- `buildGPX()`, `buildKML()`, `buildJSON()`: Helpers to format exports.

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## Use Cases & Target Market

### Primary Users  
- \*\*Rally Event Organizers\*\*: Route planning, checkpoint verification.  
- \*\*Rally Teams\*\*: Navigate and review routes in competition.  
- \*\*GIS/Data Analysts\*\*: Export data for mapping software.

### Value Propositions  
- Field-tested UI for rally conditions  
- Fully offline-capable with auto-save and sync recovery  
- Fast, intuitive interface for non-technical users  
- Compatible with industry-standard export formats

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## Strategic Vision

### Future Enhancements  
- \*\*Voice cue capture and playback\*\*  
- \*\*Auto-sync with Supabase or Firebase\*\*  
- \*\*Team collaboration with user roles\*\*  
- \*\*Image capture at waypoints\*\*  
- \*\*Elevation and terrain overlays\*\*

### Go-to-Market Strategy  
- Offer as white-label to motorsport bodies  
- Partner with rally clubs and GPS equipment suppliers  
- Monetize via premium features and cloud sync subscriptions

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## Investment & Licensing Opportunity  
Rally Mapper is actively seeking investment and partnership for:  
- Scaling development to Android and desktop web  
- Integrating commercial GPS datasets  
- Packaging for B2B licensing

The IP, source code, and brand are available for acquisition or co-development under license.

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## Contact  
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[Reach out via GitHub or RallyMapper contact page]

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\*\*Live App:\*\* [https://rallymapper.netlify.app](https://rallymapper.netlify.app)

\*\*Status:\*\* Active, MVP complete, investor-ready ✅