

Bike-to-Trail Camping App Product Requirements Document

1. Executive Summary

Product Overview

A mobile trip planning app that helps cycling enthusiasts discover and plan multi-stop camping trips to campgrounds with direct bike trail access. The app leverages an existing eBook database of bike-accessible campgrounds to create personalized route plans, eliminating the need for bike racks and car-dependent trail access.

Product Vision

To become the go-to platform for cyclists who want to seamlessly combine camping and biking adventures, making bike-to-trail camping accessible and easy to plan for riders of all experience levels.

Success Metrics

- Monthly Active Users (MAU): 10,000+ within first year
- Trip completion rate: 75% of planned trips are actually taken
- User retention rate: 60% at 30 days, 40% at 90 days
- App store rating above 4.5 stars
- Average trips planned per user: 3+ per year

2. Product Context

Problem Statement

Cycling enthusiasts who want to combine camping with biking face significant logistical challenges. Current solutions require loading bikes onto car racks, driving to trails, unloading bikes, and then cycling - a cumbersome process that limits spontaneity and adds complexity. Many cyclists don't know which campgrounds offer direct trail access, leading to disappointing experiences or missed opportunities for bike-accessible adventures.

Target Audience

Primary Users:

- Demographics: Adults aged 25-55, outdoor enthusiasts with disposable income (\$50K+ household income)

- Behaviors: Plan camping trips 2-6 times per year, own quality bikes, value outdoor experiences over luxury accommodations
- Pain points: Difficulty finding bike-accessible campgrounds, complex trip planning with multiple stops, uncertainty about trail quality and campground amenities
- Geographic focus: Initially US-based, with concentration in regions with established bike trail networks

Secondary Users:

- RV owners with bike storage who want to explore new areas
- Cycling clubs planning group trips
- Outdoor adventure bloggers and influencers

Market Analysis

- Market size: 47 million Americans went camping in 2022, with 20% being repeat/frequent campers
- Cycling market: 50+ million Americans ride bikes regularly
- Competition: General camping apps (Campendium, iOverlander) and cycling route apps (Strava, Komoot) exist separately but no integrated solution
- Opportunity: Bridge the gap between camping and cycling communities with specialized, curated content

3. Product Goals & Objectives

Primary Goals

1. Launch MVP with 500+ campgrounds from eBook database within 6 months
2. Achieve 5,000 app downloads in first 6 months post-launch
3. Generate user-created trip plans with 80% accuracy in route optimization
4. Build engaged community with 25% of users saving/sharing trip plans

Success Criteria

- Users successfully complete trip planning flow: 70% completion rate
- Average time to create a trip plan: under 15 minutes
- User satisfaction with recommended routes: 4.0+ stars average
- Monthly trip plan creation: 1,000+ plans within first year

4. Feature Requirements

Core Features (MVP)

Feature 1: eBook Database Integration

- Description: Import and structure campground data from the eBook PDF, making it searchable and mappable
- User story: As a camper, I want to browse bike-accessible campgrounds so that I can find places to stay that connect directly to trails
- Acceptance criteria:
 - All campgrounds from eBook are imported with location, amenities, and trail access details
 - Campground data includes photos, contact info, pricing, and booking details
 - Search functionality by location, amenities, and trail type
 - Offline access to campground database
- Priority: High

Feature 2: Trip Planning with Drive Time Preferences

- Description: Allow users to plan multi-stop trips with customizable driving time between stops
- User story: As a cyclist, I want to set my preferred driving time between campgrounds so that I can create a trip that matches my travel preferences
- Acceptance criteria:
 - Users can set driving time preferences (30 min - 4 hours between stops)
 - Route optimization suggests campgrounds within specified driving distance
 - Visual route display on map with driving times and distances
 - Ability to add/remove/reorder stops manually
- Priority: High

Feature 3: Interactive Route Map

- Description: Visual map interface showing planned route, campgrounds, and bike trail connections
- User story: As a trip planner, I want to see my route visually so that I can understand the geography and make informed decisions about stops
- Acceptance criteria:
 - Interactive map showing campgrounds, trails, and driving routes
 - Different icons for campground types and trail difficulties
 - Tap-to-view campground details from map

- Ability to zoom and pan across entire trip route
- Priority: High

Feature 4: Trip Itinerary Management

- Description: Create, save, edit, and share complete trip itineraries
- User story: As a camper, I want to save my trip plans so that I can reference them later and share with travel companions
- Acceptance criteria:
 - Save unlimited trip plans to device
 - Edit existing trip plans (add/remove stops, adjust dates)
 - Export trip details (PDF, email, or share link)
 - Basic trip information (dates, total distance, estimated costs)
- Priority: High

Feature 5: Navigation Integration

- Description: One-tap navigation to next stop using user's preferred map application
- User story: As a traveler following my trip plan, I want to easily navigate to my next campground so that I don't have to manually enter addresses while driving
- Acceptance criteria:
 - "Navigate to Next Stop" button prominently displayed on trip view
 - Integration with Apple Maps, Google Maps, and Waze
 - User can set preferred navigation app in settings
 - Passes exact campground coordinates and name to navigation app
 - Works offline by opening navigation app with cached location data
 - Progress tracking - mark stops as "visited" or "current destination"
- Priority: High

Secondary Features (Post-MVP)

Feature 6: Trail Difficulty & Type Filtering

- Description: Filter campgrounds by connected trail types (mountain biking, road cycling, mixed-use)
- User story: As a cyclist with specific riding preferences, I want to filter campgrounds by trail type so that I find suitable riding options

- Priority: Medium

Feature 7: Weather Integration

- Description: Display weather forecasts for planned trip dates and locations
- User story: As a trip planner, I want to see weather forecasts so that I can pack appropriately and adjust plans if needed
- Priority: Medium

Feature 8: User Reviews & Photos

- Description: Allow users to add reviews, photos, and updates about campgrounds and trails
- User story: As a returning user, I want to share my experience so that other cyclists can benefit from current information
- Priority: Medium

Feature 9: Camping Reservation Integration

- Description: Deep links to reservation systems or campground booking websites
- User story: As a trip planner, I want to book campsites directly so that I can secure my planned stops
- Priority: Low

Features Out of Scope (V1)

- Social features (following other users, social feeds)
- Advanced route optimization (avoiding highways, scenic route preferences)
- Integration with bike computer devices (Garmin, Wahoo)
- Campground availability real-time checking
- In-app booking and payment processing

5. User Experience Requirements

User Flow

Primary user journey through the trip planning and execution process:

1. User opens app and browses campground database or starts trip planning
2. User enters trip parameters (start/end points, dates, driving time preferences)
3. App suggests route with campground stops based on preferences

4. User reviews suggested route, makes adjustments, and finalizes plan
5. User saves trip and can access offline for reference during travel
6. **During trip:** User taps "Navigate to Next Stop" to launch preferred map app with turn-by-turn directions
7. User marks stops as visited and continues to next destination
8. Post-trip: User optionally adds reviews/photos of visited locations

Onboarding

- Welcome screen explaining the app's unique value proposition
- Optional tutorial showing how to plan a first trip (3-4 screens)
- Permission requests for location access (for nearby campgrounds)
- No account creation required initially (anonymous usage allowed)

Navigation Structure

- **Bottom Tab Navigation:**
 - Discover (browse campgrounds)
 - Plan Trip (trip planning interface)
 - My Trips (saved itineraries)
 - Settings/Profile
- **Deep linking:** Direct links to specific campgrounds or shared trip plans
- **Gesture-based:** Swipe gestures for map navigation and trip editing

6. Technical Requirements

Platform Support

- **iOS:** Minimum version iOS 14.0+ (covers 95%+ of active devices)
- **Android:** Minimum version Android 8.0+ (API level 26)
- **Cross-platform framework:** React Native for code sharing and faster development

Performance Requirements

- App launch time: < 3 seconds on average devices
- Map loading time: < 2 seconds for initial view
- Trip planning computation: < 10 seconds for complex multi-stop routes
- Offline functionality: Full campground database and saved trips accessible without internet

- Battery optimization: GPS usage minimized when not actively planning

Data & Storage

- **Local storage:** Complete campground database (estimated 50-100MB), user trip plans, cached map tiles
- **Cloud sync:** Optional backup of trip plans to iCloud/Google Drive
- **Data updates:** Quarterly updates to campground database via app updates or cloud sync

Integration Requirements

- **Mapping APIs:** Apple Maps (iOS) and Google Maps (Android) for route calculation and display
- **Navigation integration:** Deep linking to Apple Maps, Google Maps, and Waze for turn-by-turn navigation
- **Location services:** GPS for current location and nearby campground discovery
- **Third-party services:**
 - Crashlytics for crash reporting
 - Analytics (Firebase or similar)
 - Weather API (OpenWeatherMap or similar) for post-MVP features
- **File processing:** PDF parsing capabilities for eBook data extraction and updates

7. Security & Privacy

Data Protection

- User data encryption requirements
- Secure authentication methods
- Privacy policy compliance (GDPR, CCPA)

App Security

- Code obfuscation requirements
- API security measures
- Secure data transmission (HTTPS/TLS)

8. Compliance & Legal

App Store Requirements

- App Store Review Guidelines compliance

- Google Play Policy compliance
- Content rating requirements

Legal Considerations

- Terms of service requirements
- Privacy policy requirements
- Age restrictions (COPPA compliance if applicable)

9. Analytics & Monitoring

Analytics Requirements

- User behavior tracking
- Feature usage metrics
- Performance monitoring
- Crash reporting

Key Metrics to Track

- User acquisition metrics
- User engagement metrics
- Technical performance metrics
- Business metrics (revenue, conversion rates)

10. Accessibility

Accessibility Standards

- WCAG 2.1 AA compliance
- Screen reader compatibility
- Voice control support
- High contrast mode support

Inclusive Design

- Multi-language support requirements
- Cultural considerations
- Device compatibility (various screen sizes, older devices)

11. Launch Strategy

Rollout Plan

- **Alpha testing (Month 4-5):** Internal team testing with 10-15 camping/cycling enthusiasts
- **Beta testing (Month 6):** 100 users from cycling communities and camping forums
- **Soft launch (Month 7):** Release in 3-5 states with high cycling activity (Colorado, California, Vermont, North Carolina, Oregon)
- **Full launch (Month 8):** National release with PR and marketing campaign

Marketing Requirements

- **App store optimization (ASO):** Keywords: "bike camping", "cycle touring", "campground finder", "bike trails"
- **Screenshots:** Show trip planning interface, map views, campground details, and offline capability
- **App preview video:** 30-second demo of planning a multi-stop bike camping trip
- **Launch partnerships:** Collaborate with cycling gear brands, camping equipment companies, and outdoor adventure blogs

12. Success Measurement

Launch Metrics (First 30 days)

- Download targets
- User activation rates
- User feedback scores

Long-term Metrics (3-12 months)

- User retention rates
- Feature adoption rates
- Revenue targets (if applicable)

13. Timeline & Milestones

Development Phases

- **Phase 1 - Research & Design (Months 1-2):** eBook data analysis, user research, UI/UX design
- **Phase 2 - MVP Development (Months 3-5):** Core features development, database setup, basic testing

- **Phase 3 - Testing & Refinement (Months 6-7):** Beta testing, bug fixes, performance optimization
- **Phase 4 - Launch Preparation (Month 7-8):** App store submission, marketing materials, launch campaign
- **Phase 5 - Launch & Post-Launch Support (Month 8+):** Public release, user support, iterative improvements

Key Milestones

- eBook data extraction and structuring: Month 1
- UI/UX design completion: Month 2
- Trip planning algorithm completion: Month 4
- MVP development completion: Month 5
- Beta testing begins: Month 6
- App store submission: Month 7
- Launch date: Month 8

14. Resources & Team

Required Team Members

- **Product Manager:** Define requirements, coordinate development, manage stakeholders
- **UI/UX Designer:** Create user interface designs, conduct user research, design trip planning flow
- **React Native Developer (2):** Build cross-platform mobile app, implement trip planning algorithms
- **Backend Developer:** Set up data infrastructure, API development, database management
- **QA Engineer:** Test app functionality, ensure cross-platform compatibility, performance testing
- **Data Specialist:** Process eBook content, structure campground database, maintain data quality

Budget Considerations

- Development team costs: \$200K-300K for 8-month development cycle
- Third-party service costs: \$200-500/month (mapping APIs, analytics, crash reporting)
- App store fees: \$99/year (Apple), \$25 one-time (Google Play)
- Beta testing platform: \$100-200/month
- Legal costs: \$5K-10K for terms of service, privacy policy, eBook licensing if needed

15. Risk Assessment

Technical Risks

- **eBook data extraction complexity:** PDF parsing may be more complex than anticipated
 - *Mitigation:* Allocate extra time for data processing, consider manual data entry backup plan
- **Offline map performance:** Large map tiles may impact app performance and storage
 - *Mitigation:* Implement progressive map loading, allow users to download specific regions
- **Route optimization accuracy:** Algorithm may not account for all real-world factors
 - *Mitigation:* Start with simple distance-based routing, collect user feedback for improvements

Business Risks

- **Limited market size:** Niche audience of bike campers may be smaller than projected
 - *Mitigation:* Expand to general camping audience in future versions, validate market size early
- **eBook licensing issues:** Copyright concerns with using existing campground data
 - *Mitigation:* Secure proper licensing agreements, prepare to build original database if needed
- **Seasonal usage patterns:** Camping apps may have significant seasonal variance
 - *Mitigation:* Plan for winter feature development, consider southern/warm climate focus

Market Risks

- **Competition from established players:** Existing camping or cycling apps may add similar features
 - *Mitigation:* Focus on unique bike-specific value proposition, build strong user community
- **Economic downturn impact:** Recreational spending may decrease during economic uncertainty
 - *Mitigation:* Position as cost-saving solution (no bike racks needed), target budget-conscious campers

16. Appendices

Wireframes & Mockups

[Links to design files or embedded images]

Technical Architecture Diagrams

[System architecture, database schema, API documentation]

User Research

[Links to user interviews, surveys, market research]

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