ATITIA - PG Management App
Product Requirements Document (PRD)

📋 **EXECUTIVE SUMMARY**

Product Name: Atitia
Version: 1.0.0+1
Platform: Flutter (iOS & Android)
Target Audience: PG Owners and Guests in India
App Type: Multi-role PG Management Platform

Atitia is a comprehensive Paying Guest (PG) management application that connects PG owners with potential guests through a modern, feature-rich platform. The app provides dual interfaces - one for PG owners to manage their properties, guests, and operations, and another for guests to discover, book, and manage their PG accommodations.

🎯 **PRODUCT VISION & MISSION**

Vision
To revolutionize the PG accommodation industry in India by providing a seamless, digital-first platform that enhances the experience for both PG owners and guests.

Mission
- **For PG Owners:** Streamline property management, guest operations, and revenue tracking
- **For Guests:** Simplify PG discovery, booking, and day-to-day management
- **For the Industry:** Bring transparency, efficiency, and modern technology to traditional PG operations

---

👥 **TARGET USERS**

Primary Users
1. **PG Owners**
   - Individual property owners
   - Multi-property managers
   - PG business operators

2. **PG Guests**
   - Working professionals

- Students
  - Job seekers relocating to new cities

User Personas
- **Tech-savvy millennials** (25-35 years)
- **Urban professionals** seeking convenient accommodation
- **Property owners** looking to digitize their operations
- **Students** requiring affordable housing solutions

🏗️ **TECHNICAL ARCHITECTURE**

Framework & Technology Stack
- **Frontend:** Flutter (Cross-platform)
- **Backend:** Firebase (Firestore, Auth, Storage, Functions)
- **State Management:** Provider + GetIt (Dependency Injection)
- **Navigation:** GoRouter
- **Localization:** Flutter Localizations (English & Telugu)
- **Maps:** Google Maps Flutter
- **Storage:** Firebase Storage + Supabase (Cost optimization)
- **Authentication:** Firebase Auth (Phone OTP, Google, Apple Sign-in)

Architecture Pattern
- **MVVM (Model-View-ViewModel)** with clean architecture
- **Repository Pattern** for data access
- **Provider Pattern** for state management
- **Dependency Injection** using GetIt

🔐 **AUTHENTICATION SYSTEM**

User Registration Flow
1. **Splash Screen** → App initialization and Firebase setup
2. **Role Selection** → Guest or Owner role selection
3. **Phone Authentication** → OTP verification via Firebase Auth
4. **Registration Completion** → Profile setup with KYC details
5. **Dashboard Access** → Role-specific dashboard

Authentication Methods
- **Primary:** Phone number + OTP verification
- **Secondary:** Google Sign-in
- **Secondary:** Apple Sign-in (iOS)

- **Security:** Firebase App Check for integrity

User Roles & Permissions
- **Guest Role:** Browse PGs, make bookings, manage payments, submit complaints
- **Owner Role:** Manage properties, handle bookings, track revenue, manage guests

---

🏠 **CORE FEATURES - GUEST DASHBOARD**

1. PG Discovery & Booking
Features:
- **PG Listings:** Browse available PG accommodations
- **Advanced Search:** Filter by location, price, amenities, PG type
- **Detailed Views:** Comprehensive PG information with photos, amenities, pricing
- **Interactive Maps:** Google Maps integration for location visualization
- **Booking System:** Real-time bed availability and booking management
- **Photo Gallery:** Multiple PG photos with zoom functionality

User Flow:
```

Guest Dashboard → PG Listings → PG Details → Booking Dialog → Confirmation
```

2. Food Menu Management
Features:
- **Daily Menu View:** Breakfast, lunch, and dinner options
- **Weekly Menu:** 7-day meal planning
- **Special Menus:** Festival and occasion-specific meals
- **Photo Gallery:** Food photos for each meal
- **Nutritional Info:** Optional nutrition details

3. Payment Management
Features:
- **Payment History:** Complete transaction records
- **Payment Types:** Rent, security deposit, maintenance, late fees
- **Payment Methods:** UPI, card, net banking, cash
- **Due Date Tracking:** Automated reminders for pending payments
- **Receipt Generation:** Digital payment receipts
- **Status Tracking:** Real-time payment status updates

4. Complaints & Requests
Features:
- **Issue Submission:** Categorized complaint types

- **Status Tracking:** Real-time complaint status updates
- **Photo Attachments:** Visual evidence for complaints
- **Priority Levels:** Urgent, high, medium, low priority classification
- **Response System:** Owner responses and resolution tracking

5. Profile Management
Features:
- **Personal Information:** Name, age, gender, contact details
- **KYC Documents:** Aadhaar verification and photo upload
- **Emergency Contacts:** Family/friend contact information
- **Preferences:** Language, theme, notification settings
- **Account Settings:** Profile photo, password management

🏢 **CORE FEATURES - OWNER DASHBOARD**

1. Business Overview
Features:
- **Revenue Analytics:** Monthly/yearly revenue tracking
- **Occupancy Reports:** Bed occupancy statistics and trends
- **Performance Metrics:** Key performance indicators (KPIs)
- **Quick Stats:** Total guests, pending payments, active bookings
- **Revenue Projections:** Future revenue forecasting
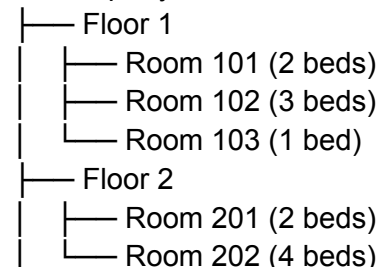
2. PG Management
Features:
- **Multi-PG Support:** Manage multiple PG properties
- **Floor Management:** Flexible floor/room/bed structure
- **Interactive Bed Map:** Visual bed occupancy representation
- **Room Configuration:** Customizable room types and pricing
- **Amenities Management:** Facility and amenity tracking
- **Photo Management:** PG photo galleries and updates

PG Structure:
```
PG Property
├── Floor 1
│   ├── Room 101 (2 beds)
│   ├── Room 102 (3 beds)
│   └── Room 103 (1 bed)
├── Floor 2
│   ├── Room 201 (2 beds)
│   └── Room 202 (4 beds)
```

└── Common Areas
```


### 3. Guest Management
**Features:**
- **Guest List:** All current and past guests
- **Booking Management:** Approve/reject booking requests
- **Guest Profiles:** Detailed guest information and history
- **Check-in/Check-out:** Guest arrival and departure tracking
- **Communication:** Direct messaging with guests
- **Guest Analytics:** Guest behavior and preference analysis

### 4. Food Menu Management
**Features:**
- **Weekly Menu Planning:** 7-day meal scheduling
- **Daily Menu Updates:** Real-time menu modifications
- **Special Occasion Menus:** Festival and event-specific meals
- **Photo Management:** Food photo uploads and organization
- **Multi-PG Menus:** Separate menus for different properties
- **Nutritional Tracking:** Optional nutrition information

### 5. Financial Management
**Features:**
- **Revenue Tracking:** Daily/monthly/yearly revenue reports
- **Payment Collection:** Track pending and completed payments
- **Expense Management:** Operational cost tracking
- **Financial Reports:** Comprehensive financial analytics
- **Bank Details:** Payment gateway integration
- **Tax Reports:** Financial documentation for tax purposes

---

## 🎨 **USER INTERFACE & EXPERIENCE**

### Design Principles
- **Material Design 3:** Modern, intuitive interface
- **Responsive Design:** Optimized for various screen sizes
- **Accessibility:** WCAG compliance for inclusive design
- **Consistent Theming:** Unified design language across features

### Theme Support
- **Light Theme:** Clean, professional appearance
- **Dark Theme:** Reduced eye strain, modern aesthetic
- **Auto Theme:** System-based theme switching

- **Custom Colors:** Brand-specific color schemes

### Navigation Structure
- **Bottom Navigation:** Primary feature access
- **Drawer Navigation:** Secondary features and settings
- **Tab Navigation:** Feature-specific sub-navigation
- **Breadcrumb Navigation:** Deep linking and context

---

## 🌐 **LOCALIZATION & INTERNATIONALIZATION**

### Supported Languages
- **English:** Primary language
- **Telugu:** Regional language support
- **Extensible:** Framework for additional languages

### Localization Features
- **RTL Support:** Right-to-left language compatibility
- **Date/Time Formats:** Region-specific formatting
- **Currency:** INR formatting and display
- **Cultural Adaptation:** Region-specific UI elements

---

## 🔧 **INTEGRATIONS & SERVICES**

### Firebase Services
- **Authentication:** User management and security
- **Firestore:** Real-time database
- **Storage:** File and image storage
- **Analytics:** User behavior tracking
- **Crashlytics:** Error monitoring and reporting
- **Performance:** App performance monitoring
- **Remote Config:** Feature flags and configuration
- **Cloud Functions:** Serverless backend logic
- **Cloud Messaging:** Push notifications

### External Services
- **Google Maps:** Location services and mapping
- **Google Sign-in:** Social authentication
- **Apple Sign-in:** iOS authentication
- **Supabase:** Cost-effective storage alternative
- **UPI Integration:** Payment processing

- **SMS Gateway:** OTP delivery

---

## 📱 **PLATFORM SPECIFIC FEATURES**

### Android Features
- **Material Design:** Native Android UI components
- **Notification Channels:** Categorized notifications
- **Background Services:** Offline functionality
- **File System Access:** Document management
- **Camera Integration:** Photo capture and upload

### iOS Features
- **Cupertino Design:** Native iOS UI components
- **Apple Sign-in:** Seamless iOS authentication
- **Push Notifications:** APNs integration
- **Photo Library:** Native photo selection
- **Keychain:** Secure credential storage

---

## 🔒 **SECURITY & PRIVACY**

### Data Security
- **End-to-End Encryption:** Secure data transmission
- **Firebase Security Rules:** Database access control
- **App Integrity:** Firebase App Check protection
- **Secure Storage:** Encrypted local data storage
- **API Security:** Rate limiting and authentication

### Privacy Compliance
- **Data Minimization:** Collect only necessary data
- **User Consent:** Explicit permission requests
- **Data Retention:** Automatic data cleanup policies
- **GDPR Compliance:** European privacy regulation adherence
- **Local Privacy Laws:** India-specific privacy compliance

---

## 📊 **ANALYTICS & MONITORING**

### User Analytics
- **User Engagement:** Feature usage tracking

- **Conversion Funnel:** Booking and payment analytics
- **User Retention:** Long-term usage patterns
- **Performance Metrics:** App speed and reliability
- **Error Tracking:** Crash reporting and debugging

### Business Analytics
- **Revenue Tracking:** Financial performance metrics
- **Occupancy Analytics:** Property utilization rates
- **Guest Behavior:** Usage pattern analysis
- **Market Trends:** Industry insights and forecasting

---

## 🚀 **DEPLOYMENT & RELEASE**

### Build Configuration
- **Debug Build:** Development and testing
- **Release Build:** Production deployment
- **Code Signing:** Secure app distribution
- **Version Management:** Semantic versioning

### Distribution Channels
- **Google Play Store:** Android distribution
- **Apple App Store:** iOS distribution
- **Internal Testing:** Beta testing programs
- **Over-the-Air Updates:** Firebase Remote Config

---

## 📈 **SUCCESS METRICS & KPIs**

### User Engagement
- **Daily Active Users (DAU):** User retention metrics
- **Monthly Active Users (MAU):** Long-term engagement
- **Session Duration:** Time spent in app
- **Feature Adoption:** Usage of specific features
- **User Satisfaction:** App store ratings and reviews

### Business Metrics
- **Booking Conversion Rate:** Guest to booking ratio
- **Revenue per User:** Average revenue per guest/owner
- **Occupancy Rate:** Property utilization percentage
- **Payment Success Rate:** Successful transaction percentage
- **Customer Support Tickets:** Issue resolution metrics

---

## 🔮 **FUTURE ROADMAP**

### Phase 2 Features
- **Advanced Analytics:** Machine learning insights
- **Chat System:** Real-time owner-guest communication
- **Review System:** Guest feedback and ratings
- **Loyalty Program:** Rewards and referral system
- **Multi-language Support:** Additional regional languages

### Phase 3 Features
- **AI Recommendations:** Smart PG suggestions
- **IoT Integration:** Smart home device connectivity
- **Blockchain Payments:** Cryptocurrency payment options
- **VR Tours:** Virtual reality property viewing
- **API Platform:** Third-party integrations

---

## 📋 **TECHNICAL SPECIFICATIONS**

### Minimum Requirements
- **Android:** API level 21 (Android 5.0)
- **iOS:** iOS 12.0+
- **RAM:** 2GB minimum, 4GB recommended
- **Storage:** 100MB app size, 500MB cache
- **Network:** 3G/4G/WiFi connectivity

### Performance Targets
- **App Launch Time:** < 3 seconds
- **Screen Transition:** < 300ms
- **API Response Time:** < 2 seconds
- **Offline Functionality:** Core features available offline
- **Battery Usage:** Optimized for minimal battery drain

---

## 🧪 **TESTING STRATEGY**

### Testing Types
- **Unit Testing:** Individual component testing
- **Widget Testing:** UI component testing

- **Integration Testing:** Feature integration testing
- **End-to-End Testing:** Complete user journey testing
- **Performance Testing:** Load and stress testing
- **Security Testing:** Vulnerability assessment

### Test Coverage
- **Code Coverage:** Minimum 80% code coverage
- **Feature Coverage:** All user-facing features tested
- **Device Coverage:** Multiple device and OS version testing
- **Network Coverage:** Various network condition testing

---

## 📞 **SUPPORT & MAINTENANCE**

### Support Channels
- **In-App Help:** Contextual help and tutorials
- **Email Support:** Direct customer support
- **FAQ Section:** Common questions and answers
- **Video Tutorials:** Feature demonstration videos
- **Community Forum:** User-to-user support

### Maintenance Schedule
- **Regular Updates:** Monthly feature updates
- **Security Patches:** Immediate security fixes
- **Bug Fixes:** Weekly bug resolution
- **Performance Optimization:** Quarterly performance reviews

---

## 📄 **LEGAL & COMPLIANCE**

### Terms & Conditions
- **User Agreement:** Platform usage terms
- **Privacy Policy:** Data handling and privacy
- **Refund Policy:** Payment and cancellation terms
- **Liability Limitation:** Service limitation clauses

### Regulatory Compliance
- **Data Protection:** Personal data protection laws
- **Payment Regulations:** Financial service compliance
- **Real Estate Laws:** Property rental regulations
- **Consumer Protection:** User rights and protection

---

## 🎯 **CONCLUSION**

Atitia represents a comprehensive solution for the PG management industry in India, combining modern technology with user-centric design to create a seamless experience for both PG owners and guests. The app's robust architecture, extensive feature set, and focus on security and scalability position it as a market-leading solution in the accommodation management space.

The dual-role approach ensures that both sides of the market are adequately served, while the integration of modern technologies like Firebase, Google Maps, and real-time analytics provides a competitive advantage in the market.

With its comprehensive feature set, scalable architecture, and focus on user experience, Atitia is well-positioned for successful deployment and long-term growth in the Indian PG management market.

---

**Document Version:** 1.0
**Last Updated:** December 2024
**Next Review:** January 2025
**Document Owner:** Product Team
**Approved By:** Technical Lead & Product Manager

---

*This document serves as the comprehensive guide for the Atitia PG Management App development, testing, and deployment process.*