# Social Connection App

## Technical Documentation & Implementation Guide

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## Core Concept

### Dual-Mode Architecture

The application operates in two distinct modes to cater to different user needs:

#### 🏢 Professional Mode

* Event-based networking
* Focused on professional settings and business connections
* Structured room management for conferences and meetings

#### 🎉 Casual Mode

* Location-based, real-time connections
* Designed for informal settings
* Flexible room creation and joining

### Key Components

* **Room-Based Interactions**: Create and join shared environments
* **Private Connections**: Individual communication channels
* **Real-Time Location Sharing**: Optional location tracking with privacy controls

## Feature Overview

### 1. MVP Features

#### User Authentication & Profile

* Multi-platform sign-up options:
  + Email
  + Phone number
  + Social accounts
* Dual-mode profile customization
  + Professional settings
  + Casual settings

#### Room Management

* **Creation Features**
  + Unique invite links
  + QR code generation
  + Location-based visibility
* **Discovery**
  + Proximity-based room finding
  + Category filters

#### Friend System

* Connection Management
  + Send/accept friend requests
  + Profile viewing permissions
  + Private messaging capabilities

#### Location Features

* Real-time location sharing
  + Map integration
  + Privacy controls
  + Toggle options

#### Security

* Privacy Settings Dashboard
  + Profile visibility controls
  + Location sharing permissions
  + Connection request filters

### 2. Secondary Features

#### Advanced Positioning

* Ultra-Wideband (UWB) integration
* Wi-Fi RTT capabilities
* Bluetooth mesh networking

#### Enhanced Friend Features

* Real-time map overview
* Location filtering
* Activity status tracking

#### Augmented Reality

* Real-time directional guidance
* Friend location overlay
* Indoor navigation

#### Social Features

* Group chat functionality
* Multi-user room invites
* Interest-based connections

## Technical Implementation

### Phase 1: Private Connections

graph TD  
 A[Friend Request Sent] --> B{Request Accepted?}  
 B -->|Yes| C[Create Connection]  
 B -->|No| D[Request Expired]  
 C --> E[Enable Private Chat]  
 C --> F[Enable Location Sharing]

### Phase 2: Chat System

* WebSocket implementation
* Firebase real-time database
* Message encryption
* Read receipts

### Phase 3: Location Services

* Mapbox/OpenStreetMap integration
* Real-time tracking system
* Geofencing capabilities
* Battery optimization

### Phase 4: Room System

* Invite management
* QR code generation
* Temporary access tokens
* Room persistence

### Phase 5: Proximity System

* Background location monitoring
* Notification management
* Distance calculation
* Battery-efficient polling

### Phase 6: Indoor Positioning

* UWB protocol implementation
* Wi-Fi RTT triangulation
* Bluetooth mesh networking
* Sensor fusion algorithms

## Development Roadmap

### 🚀 Phase 1: MVP Launch (Q1)

* Core authentication
* Basic room functionality
* Essential chat features
* Simple location sharing

### 🗺️ Phase 2: Location Enhancement (Q2)

* Advanced map integration
* Friend tracking features
* Privacy improvements
* Performance optimization

### 📡 Phase 3: Positioning Systems (Q3)

* Proximity alerts
* Indoor positioning
* Room-level accuracy
* Battery optimization

### 🎮 Phase 4: AR Integration (Q4)

* Basic AR implementation
* Direction finding
* Visual overlays
* Performance testing

### 💰 Phase 5: Monetization (Future)

* Premium features
* Subscription model
* Enterprise solutions
* Analytics integration

## Challenges & Considerations

### Security & Privacy

* End-to-end encryption
* Data protection compliance
* User consent management
* Privacy policy implementation

### Technical Challenges

* Device compatibility matrix
* Battery consumption optimization
* Network reliability handling
* Cross-platform consistency

### User Experience

* Intuitive onboarding
* Permission management
* Feature discovery
* Performance optimization

### Business Considerations

* Market positioning
* Monetization strategy
* User retention
* Growth metrics

*Note: This documentation is subject to updates and revisions as the project evolves.*