

# InnerCircle Design Documentation

## InnerCircle - Design Documentation

### Voice-First AI Journaling Companion

#### 1. Executive Summary

**InnerCircle** is a voice-first mental wellness journaling app that removes the friction of traditional journaling. Users simply speak their thoughts, and our AI agents analyze emotions, discover patterns, and generate personalized insights—all without requiring users to type a single word.

#### Key Differentiators

- **Voice-First:** Speak naturally, no keyboard required
- **Context-Aware Questions:** AI generates questions based on your history
- **Agentic Architecture:** Multiple specialized AI agents work together
- **Privacy-Focused:** Local-first data storage, anonymous by default

#### 2. Tech Stack

##### Frontend

Technology	Purpose
React Native + Expo	Cross-platform mobile app

Technology	Purpose
TypeScript	Type-safe development
Expo Router	File-based navigation
React Native Reanimated	Smooth animations
Expo Speech/Audio	Voice recording & TTS

Backend

Technology	Purpose
FastAPI	High-performance Python API
SQLAlchemy + SQLite	Local-first database
Pydantic	Request/response validation
OpenAI GPT-4	AI agent intelligence

Infrastructure

Technology	Purpose
Expo Notifications	Local scheduled reminders

3. System Architecture

High-Level Overview

**Mobile App Layer:** - Home Screen → Voice Session - Journal List → Entry Details - Insights Screen → Visualizations - Settings → Schedule Configuration

**Voice Session Flow:** 1. Speech-to-Text (STT) captures user voice 2. Backend processes and generates response 3. Text-to-Speech (TTS) speaks AI response

**Backend Layer:** - FastAPI REST API - Agent Orchestrator coordinates AI agents - SQLite stores all user data locally

**Data Layer:** - Users, Journals, Insights, Health Data, Schedules

4. Agentic Architecture

Our multi-agent system uses specialized AI agents that each handle specific tasks:

## Agent Overview

Agent	When Called	What It Does
Question Generator	On app open	Analyzes past 3-7 days of journals to generate a personalized starting question
Emotion Analyst	On journal save	Detects emotions, measures intensity, calculates sentiment score
Pattern Discovery	On insight generation	Finds trends over 7-30 days, correlates with health data
Reflection Agent	During conversation	Generates empathetic follow-up responses to continue the dialogue

## How Agents Work Together

**Starting a Session:** 1. User opens voice session 2. **Question Generator** reads recent journals 3. Returns personalized question like *“You mentioned work stress yesterday. How are you feeling about it today?”*

**During Conversation:** 1. User speaks their thoughts 2. **Reflection Agent** processes what they said 3. Generates supportive follow-up question to deepen reflection 4. Conversation continues naturally

**On Save:** 1. Full transcript sent to **Emotion Analyst** 2. Detects emotions: `[{name: "anxious", intensity: 0.7}, {name: "hopeful", intensity: 0.5}]` 3. Extracts themes: `["work", "relationships"]` 4. Calculates sentiment: `0.3` (slightly positive)

**Weekly Insights:** 1. **Pattern Discovery** analyzes all journals from past week 2. Finds correlations (e.g., “better mood on days with more sleep”) 3. Generates actionable suggestions

## 5. Data Flow

### Voice Journal Session

Step	Action	API Call
1	User opens app	GET /journals/question

Step	Action	API Call
2	AI speaks personalized question	Text-to-Speech
3	User responds verbally	Speech-to-Text
4	AI generates follow-up	POST /voice/reflection
5	Conversation continues	Steps 3-4 repeat
6	User ends session	POST /journals (saves transcript)
7	Emotion analysis runs	Backend processes automatically

Key API Endpoints Used

- **Question Generation:** GET /journals/question?user\_id=1&days=3
- **Voice Reflection:** POST /voice/reflection with {content: "user's message"}
- **Save Journal:** POST /journals with full transcript
- **Get Insights:** GET /insights/weekly?user\_id=1

6. Database Schema

Tables

**users** - id, anonymous\_id, preferences, journaling\_streak, total\_entries, created\_at

**journals** - id, user\_id, content, title, sentiment (JSON), emotions (JSON), themes (JSON), is\_voice\_entry, time\_of\_day, created\_at

**insights** - id, user\_id, type, summary, patterns (JSON), suggestions (JSON), created\_at

**health\_data** - id, user\_id, date, sleep (JSON), activity (JSON), heart (JSON)

**scheduled\_conversations** - id, user\_id, time, days\_of\_week (JSON), conversation\_mode, is\_enabled

## 7. Future Enhancements

### Phase 1: Push Notifications

- Time-based triggers (scheduled conversation times)
- Location-based triggers (arrive home → prompt to journal)
- Smart timing based on user patterns

### Phase 2: Affirmations

- Daily personalized affirmations based on recent journals
- Generated by Pattern Discovery + Reflection agents
- Morning motivation, evening reflection

### Phase 3: Interactiveness Control

- Voice tone selection: Warmer / Neutral / Clear
- Follow-up depth: Minimal / Moderate / Deep dive
- AI personality: Listener only / Supportive coach / Direct analyst

### Phase 4: Multi-User Support

- Cloud database (PostgreSQL/Supabase)
- Secure authentication (OAuth/JWT)
- End-to-end encryption
- Cross-device sync

### Phase 5: Custom Variable Graphs

- User selects X and Y variables
- Options: Sleep, Exercise, Screen time, Mood, Energy, Stress
- Scatter plots show personal correlations
- “I want to see how sleep affects my mood”

### Phase 6: Agent Triggers

- Health data sync → Agent adjusts tone (“User slept 4hrs, be gentle”)
- Calendar integration → Context-aware prompts (“Big meeting today”)
- Location changes → Activity-based check-ins
- Streak milestones → Celebration messages

## 8. Conclusion

InnerCircle reimagines journaling for the modern user by making reflection voice first and effortless. Instead of typing into a blank page, you simply speak, turning journaling into something that feels as natural as having a conversation.

InnerCircle is not a therapy app. The AI companion does not give advice, diagnose, reframe, or try to fix anything. It listens, reflects what it hears in simple human language, and occasionally asks a gentle question to help you go a little deeper.

At its core, InnerCircle is a space to think out loud without pressure, guidance, or judgment so understanding can emerge on its own.

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