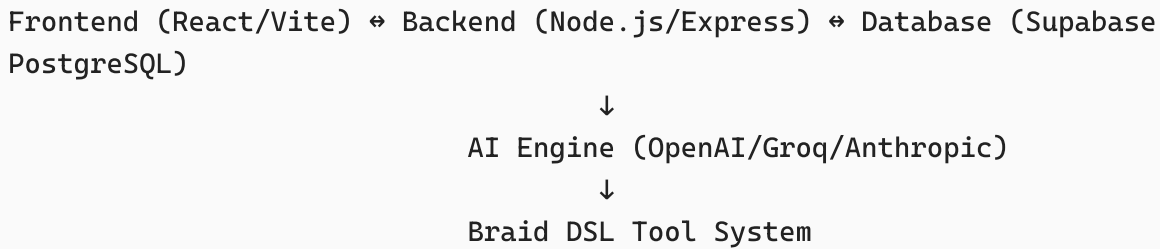


# AiSHA CRM Architecture

AiSHA CRM is a **multi-tenant SaaS CRM platform** with AI-powered features, built as a modern web application with voice-enabled capabilities.

## Core Architecture



## Key Components

### 1. Multi-Tenant Foundation

- Every entity is isolated by `tenant_id`
- Row-Level Security (RLS) policies enforce tenant isolation
- Each customer is a separate tenant with their own data

### 2. AI-Powered Core

- **Voice Assistant (AiSHA)** - Voice-enabled chat interface
- **AI Tool Calling** - Uses Braid DSL for structured function calls
- **Smart Automation** - Lead scoring, activity management, workflow automation
- **Multiple LLM Support** - OpenAI, Groq, Anthropic with provider abstraction

### 3. Entity Relationship Model

```
tenants (customers)
├─ users (auth via Supabase)
├─ employees (staff members)
├─ leads (sales prospects)
├─ contacts (people) → accounts (companies)
├─ opportunities (deals with pipeline stages)
├─ activities (tasks/calls/meetings with polymorphic relations)
├─ notes (attached to any entity)
└─ workflows (automation rules)
```

# Technology Stack

## Frontend:

- React with Vite
- Component-based UI with reusable forms
- Real-time chat widget for AI assistant
- Universal detail panels for all entities

## Backend:

- Node.js/Express API server
- Route-based organization ( /routes/ for endpoints)
- Supabase client for database operations
- AI integration layer with tool calling

## AI System:

- **Braid DSL** - Declarative tool definitions ( .braid files)
- **Tool Registry** - Maps AI capabilities to backend functions
- **Context Engine** - Provides tenant-specific data context to AI
- **Multi-Provider** - Supports different LLM providers

## Database:

- Supabase PostgreSQL
- Multi-tenant with RLS policies
- Polymorphic relationships for activities/notes

# Key Features

## 1. Voice-Enabled AI Assistant

- Natural language CRM operations
- Voice input/output capabilities
- Context-aware responses with tenant data

## 2. Smart Activity Management

- Time zone handling (local time storage)
- Polymorphic linking to any entity
- Due date/time tracking

### 3. Pipeline Management

- Opportunity stages (prospecting → closed\_won/lost)
- Lead scoring and qualification
- Account-based selling

### 4. Workflow Automation

- n8n integration for external workflows
- React Flow-based workflow designer
- Event-driven automation triggers

## Data Flow Example

1. **User Interaction** → AI Chat Widget
2. **AI Processing** → Braid Tool System determines required actions
3. **Tool Execution** → Backend API calls with tenant context
4. **Database Operations** → Supabase with RLS enforcement
5. **Response** → AI summarizes results back to user

## Security & Isolation

- **Multi-tenant isolation** at database level
- **API-level tenant validation** on every request
- **Role-based access** via Supabase Auth
- **Polymorphic security** - notes/activities inherit parent permissions

This architecture enables AiSHA to be both a traditional CRM and an AI-powered business assistant, with strong multi-tenant isolation and extensible AI capabilities through the Braid tool system.