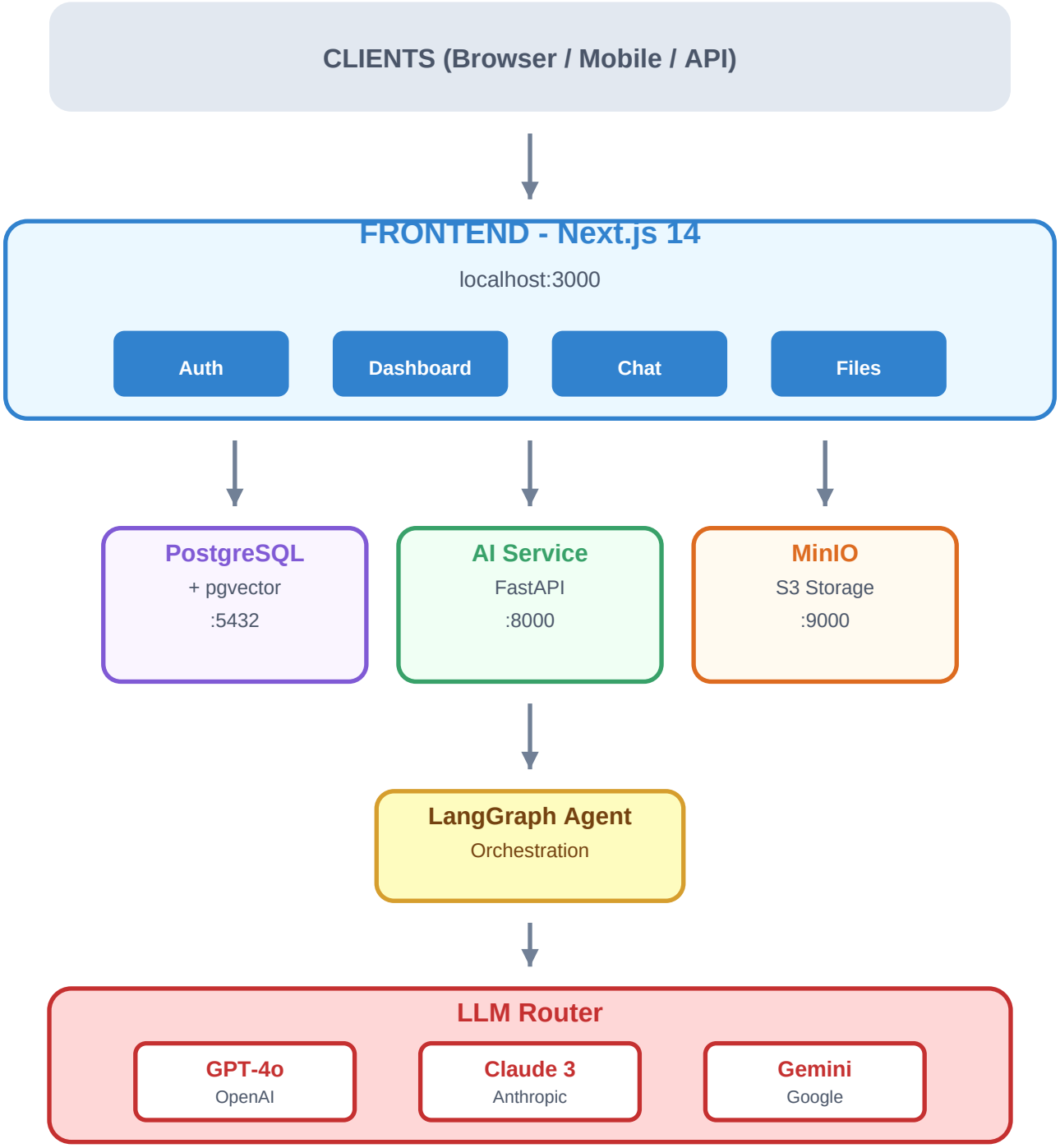
LAWSPHERE

Legal-Tech AI Platform

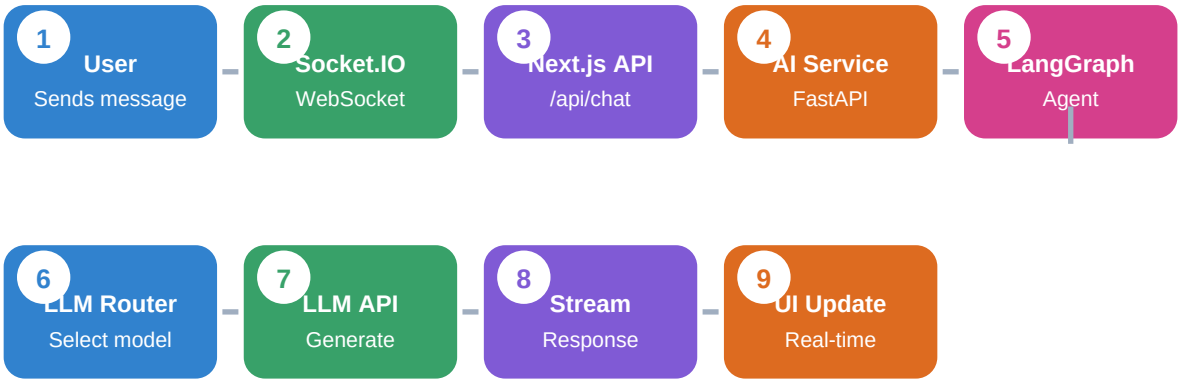
Architecture Documentation

Generated: December 26, 2025

System Architecture



Data Flow - Chat Message



Key Features

Feature	Description
Multi-LLM Support	GPT-4, Claude 3, Gemini Pro with intelligent routing
Real-time Chat	Socket.IO powered live collaboration
Document Processing	PDF, DOCX, OCR with AI-powered analysis
Legal Research	Vector search with pgvector for semantic retrieval
Authentication	OAuth (Google, GitHub) + Credentials
File Storage	S3-compatible storage with MinIO

Frontend Stack

Located in: apps/web/

Component	Technology	Purpose
Framework	Next.js 14	React framework with App Router
UI Library	React 18	Component-based UI
Styling	Tailwind CSS	Utility-first CSS framework
Components	Radix UI	Accessible UI primitives
State	Zustand	Lightweight state management
Real-time	Socket.IO	WebSocket communication
Auth	NextAuth.js	OAuth + Credentials
ORM	Prisma	Type-safe database access

Backend Stack (AI Service)

Located in: apps/ai-service/

Component	Technology	Purpose
Framework	FastAPI	High-performance Python API
Server	Uvicorn	ASGI server
AI Orchestration	LangGraph	Stateful agent workflows
LLM Framework	LangChain	LLM abstractions
Observability	LangSmith	Tracing and debugging
OpenAI	langchain-openai	GPT-4, GPT-4o models
Anthropic	langchain-anthropic	Claude 3 models
Google	langchain-google-genai	Gemini models

Infrastructure Services

Service	Image	Port	Purpose
PostgreSQL	pgvector/pgvector:pg16	5432	Database + Vector Store
Redis	redis:7-alpine	6379	Cache, Sessions
MinIO	minio/minio:latest	9000, 9001	S3 File Storage

Service URLs & Ports

Service	Port	URL
Web App	3000	http://localhost:3000
AI Service	8000	http://localhost:8000
API Docs	8000	http://localhost:8000/docs
PostgreSQL	5432	postgresql://localhost:5432
Redis	6379	redis://localhost:6379
MinIO API	9000	http://localhost:9000
MinIO Console	9001	http://localhost:9001

Quick Start Commands

Command	Description
`bash scripts/start-all.sh`	Start all services (Bash)
`scripts\start-all.cmd`	Start all services (Windows)
`npm run dev:web`	Start web app only
`npm run dev:ai`	Start AI service only
`npm run db:studio`	Open Prisma Studio
`podman ps`	Check running containers