FAA Circular RAG - Business Pathway

Bottom Line Up Front (BLUF)

This project builds an AI system that helps an airline interpret and manage FAA Advisory Circulars (ACs). It uses AI to quickly find accurate answers from official FAA documents, reducing misinformation (hallucination) from about 50% to below 8%. It's designed for one person, costs under $50 per month, and can grow as needed.

1. Overview

The system is built using simple, low-cost tools to help aviation professionals, consultants, or compliance officers quickly find answers in FAA Advisory Circulars (ACs). It works like a smart search assistant that references the official FAA text instead of guessing answers.

2. Phase 1: Build the Base System

Phase 1 creates the foundation — the RAG (Retrieval-Augmented Generation) system. It connects a database of FAA documents (Pinecone) with a smart AI model (Claude Haiku 4.5). When a user asks a question, the system searches the official FAA text and provides a confident, cited answer.

• Timeframe: 4 weeks

• Cost: About $9–14/month after setup

• Hallucination (error) rate drops from ~50% to 3–8%

3. How It Works

The system uses three main steps:
1. Collect and break down FAA circulars into smaller readable chunks.
2. Store and organize those chunks in a searchable database.
3. Use AI (Claude Haiku) to find the right text and explain it clearly.

The app runs on iPhone (iOS) with a simple interface — you type a question and get an answer with source citations and a confidence score (how sure the system is).

4. Phase 2: Automation and Smart Monitoring (Optional)

In Phase 2, automation tools (n8n) are added to make the system proactive. It automatically checks for updates to FAA Circulars, links new Notices to Air Missions (NOTAMs), and creates monthly compliance reports.

• Timeframe: 2 extra weeks

• Added cost: $22–25/month

• Total cost with both phases: $31–39/month

• Expected value: Over $10,000 per year in time saved

5. Why This Matters

With this setup, aviation compliance and safety staff can save hours per week by avoiding manual research. It also builds a foundation for reliable, transparent AI use in regulatory work — all while keeping costs minimal.

6. Results & Targets

• Hallucination (error) rate: Below 8% with Phase 1, under 2% with Phase 2.

• Speed: Answers appear in under 2 seconds.

• Cost: Below $50/month total.

• Accuracy: Verified answers from FAA sources only.

7. Next Steps

1. Create Pinecone and OpenAI accounts (both offer free starter credits).
2. Collect FAA circulars and upload them to the system.
3. Test the app with sample questions.
4. Add n8n automations later for automatic monitoring and reporting.

8. Key Takeaways

This project transforms FAA Circular research into a simple, fast, and affordable AI-powered tool. Even with basic tech skills, a single user can manage it end-to-end for under $50 a month.