

ASAPP Hackathon

Team Speed ‘Speed Airbot’

23

October

2025

Agenda

- 01 **Problem Statement** Slide 05
- 02 **Approach** Slide 08
- 03 **Technical Roadmap : From Vision to Value** Slide 09
- 04 **Target: Use Case Identification** Slide 10
- 05 **Setup: System Architecture** Slide 11
- 06 **Test: Conversation Flow Simulation** Slide 13

Agenda

-  **Supervise: Monitoring & Quality Control** Slide 14
-  **Run & Optimize: Continuous Learning** Slide 15
-  **Principles in action** Slide 16
-  **Scalability Beyond Airlines** Slide 17

Meet the team



Sarmitha

21PT27

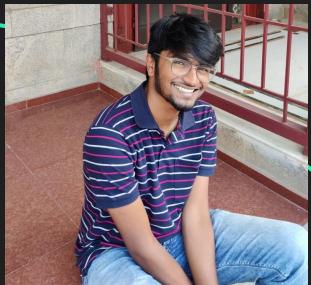
"intro"



Srinidhi

21PT30

"intro"



S Kathir Kaarthik

21PT22

I love watches, thin crust pizzas and the movie forrest gump.



Keertanapriya

21PT04

"intro"

Problem landscape – current scenario



The Airline Support Challenge: High Volume and Low Efficiency in a \$4.8 Billion market

- Airlines handle **millions** of customer interactions daily across chat, calls, and emails.
- Up to 65–70% of these are **repetitive, rule-based requests** (e.g., flight status, refunds, cancellations).
- Despite existing self-service tools, **>60% of passengers** still prefer talking to human agents, citing lack of clarity and robotic responses.
- This creates **high operational costs, agent fatigue, and longer wait times**.

The pain points



✗ Inefficient manual resolution

Repetitive queries handled by agents



✗ Fragmented user experience

Bots fail to retain context or sound human



✗ Poor scalability

Customer spikes (flight delays, weather events) overwhelm systems



The Need

With global air travel back to pre-pandemic levels and digital-first engagement becoming standard, airlines face pressure to deliver instant, intelligent, and human-like support. Our solution bridges this gap with AI-native, policy-compliant conversational systems that blend automation and empathy.

To bridge this gap, our solution leverages ASAPP's data-driven roadmap to engineer an airline-grade conversational agent - one that's as intuitive as a human, yet as efficient as AI.

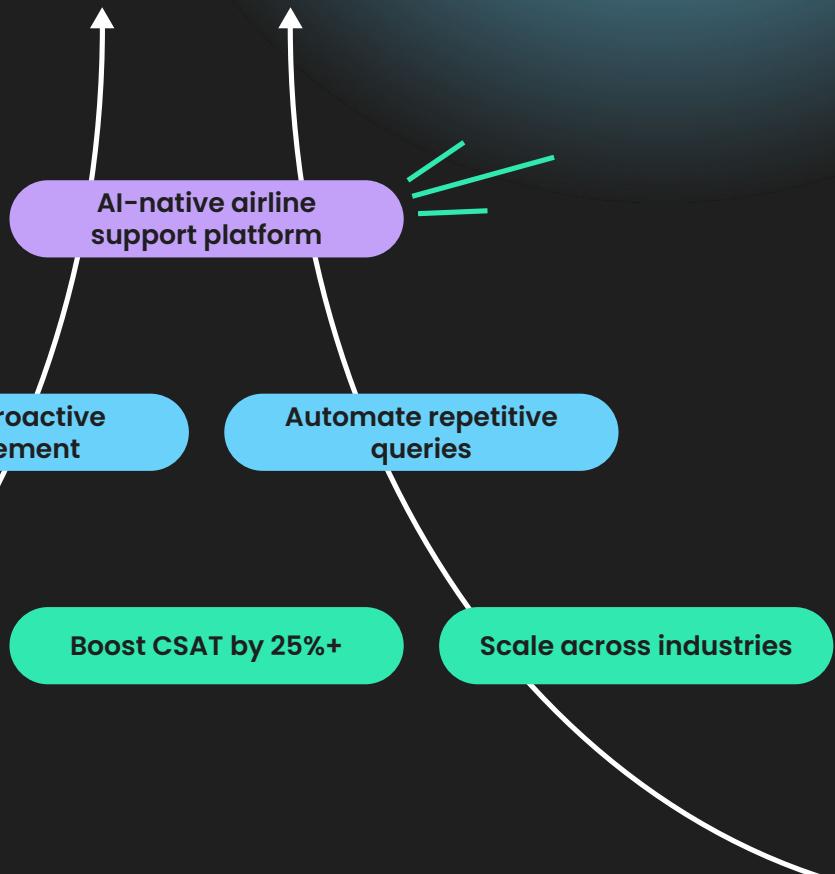
Vision & Opportunity

Our Vision

- Create a context-aware, policy-compliant AI agent that feels as **natural as a human**.
- Shift airlines from reactive query handling to proactive, personalized engagement.
- **Blend empathy with automation** to elevate customer experience.

Opportunity

- Airline contact-center market: \$4.8 B → \$12.6 B by 2033.
- **70 %** of interactions are repetitive and fit for automation.
- **Huge gap** in multi-turn, context retaining AI support solutions.



Technical Roadmap : From Vision to Value

Using ASAPP's 'Vision to Value' roadmap as our foundation, we've structured our solution to mirror its data-driven, scalable, and customer-centric approach

1. **Target** : Identify automation-heavy airline use cases
2. **Setup** : Integrate easily into airline systems
3. **Test** : Scale & simulate conversations safely
4. **Supervise** : Ensure compliance & consistency
5. **Run & Optimize** : Continuous learning and refinement

Target: Intelligent Use Case Prioritization

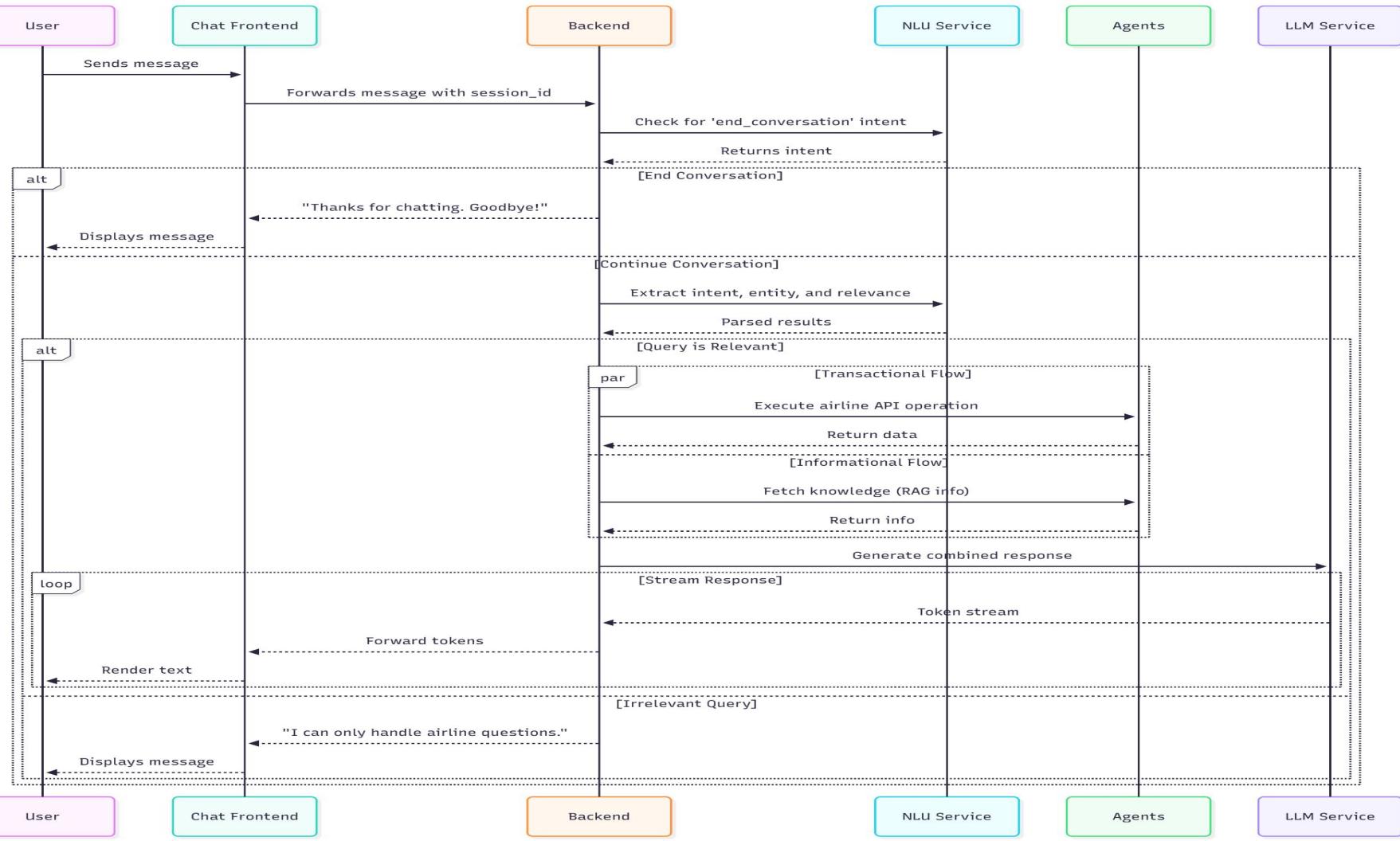
- Flight Status & Delay Updates → high frequency, easily automatable.
- Booking Changes / Cancellations → structured data retrieval + transaction.
- Refund & Policy Queries → repetitive and rule-based.
- Baggage Tracking / Complaints → moderate complexity with high query volume.
- Loyalty Program Enquiries → low urgency, consistent data flow.



Setup: System Design and Integration

- **Agents (Core Intelligence):**
 - **Transactional Agent :** Executes API-based tasks (booking, refund, status).
 - **Informational Agent :** Handles FAQ, policy lookups, and document retrieval via a vector database.
 - Both use Relevance Scoring to pick the best response path.
- **Policy Module:**
 - Ensures airline-specific tone, compliance, and wording.
 - Filters off-topic or unsafe responses.
- **LLM Interface:**
 - Generates natural, human-like replies within airline domain boundaries.
 - Integrated via secure API with response moderation layer.

- **Frontend Layer:**
 - Customer chat interface (web/app).
 - Handles message input, authentication, and session start.
- **Backend (Core Engine):**
 - **Session Manager :** tracks user context, multi-turn conversation state.
 - **Redis Cache :** enables fast retrieval of previous turns and context memory.
 - **Intent Classifier + Context Manager :** processes incoming messages, predicts intent, and maintains continuity across queries.



Test: Validation, Simulation & Quality Control

Key Testing Dimensions :

1. Intent Accuracy
2. Context Retention
3. Policy Adherence
4. Response Naturalness
5. Latency

The screenshot shows a chatbot interface titled "Speed Airlines Chatbot". At the top right are "Deploy" and three-dot buttons. Below the title is a sub-instruction: "Chat with support using text.". The main area starts with a "Welcome!!" message and a list of topics: "Ask about flight schedules.", "Baggage policies.", and "Cancellations.". A "Clear Chat" button is located below this list. To the right, there's a message: "We're here to help you with bookings, flights, and travel assistance. Please choose a category below to get started." followed by three buttons: "Generic" (with a speech icon), "Booking & Reservation" (with a blue square icon), and "Pre-Flight & Day-of-Travel" (with a globe icon). At the bottom is a text input field with placeholder text "Ask me anything." and a right-pointing arrow.

Supervise : Monitoring & Quality Control

Goals we aim to achieve :

- Maintain **consistent response** quality across thousands of sessions.
- Detect and **flag policy violations** or off-topic responses in real time.
- Provide human oversight for **continuous** improvement and trust.



Run & Optimize : Continuous Learning



- **Containerized deployment** (Docker/Kubernetes) enables fast scaling and 24/7 reliability.
- **Continuous feedback loop** collects live data to refine intents, tone, and policy adherence.
- Automated retraining and CI/CD updates ensure the system evolves **without downtime**.
- Performance dashboards **track KPIs** leading to accuracy, latency, compliance, and escalation rates.
- System grows smarter, faster, and more human with every interaction — ready for multi-industry expansion.

From Principles to Practice : The ASAPP Design Ethos

Built for Enterprise Scale	Made for Contact Centers	Safety-First Architecture	Smarter Every Day
Designed on microservice architecture — scalable across regions and workloads.	Integrates seamlessly with existing airline CRM, ticketing, and support tools.	Policy engine and compliance filters ensure every response meets airline standards.	Continuous feedback and retraining pipeline — system learns from every interaction.
Supports multiple parallel sessions using distributed caching (Redis) and async processing.	Delivers real-time insights for supervisors and agents.	Filters out off-topic, biased, or unsafe outputs from the LLM.	Integrates human feedback loops for tone and empathy optimization.
Dynamic load management.		Data handled securely with session anonymization and minimal storage footprint.	Reinforcement learning improves accuracy, fluency, and personalization over time.

Scalability Beyond Airlines



Our modular architecture enables rapid adaptation across industries, transforming our airline support bot into a cross-sector conversational AI platform.

- Built with **domain-agnostic core modules** (session manager, NLU, policy engine).
- Industry-specific logic added via **plug-in intent models** and policy templates.
- Vector-based knowledge retrieval allows **easy retraining** with new datasets.
- API-first design supports **integration with any enterprise CRM or database**.

Industry	Example Use Case
Airlines	Flight rebooking, baggage queries, refund policy assistance
Telecom	Plan upgrades, outage reports, SIM activations
Banking	Card blocking, transaction queries, KYC assistance
Retail / e-commerce	Order tracking, returns, product availability
Logistics	Shipment tracking, delay updates, delivery rescheduling

Thank you!

[github](#)