Airline Disruption Management System

System Overview & User Guide

Generated: January 12, 2026

Status: Production Ready ■

Metric	Value
Total Flights	19
Disrupted Flights	7
Disrupted Passengers	150
Total Cost Impact	$257,760
System Status	■ Operational

1. FLIGHT LIST TAB (Home Page)

Purpose: Default landing page showing all flights with their current status and operational information.

What You See:

■■ **Statistics Panel at Top:** Total flights (19), Disrupted (7), On-Time (12), Last refresh time
■ **7 Delayed Flights with RED Status:** Shows delay duration and "View Details" button
■ **12 On-Time Flights with GREEN Status:** Shows green "On Time" badge only
✎■ **Flight Information:** Flight number, origin/destination, scheduled vs estimated times
■ **Interactive:** Click "View Details" on any delayed flight to see passenger list

Delayed Flights (7 Total):

Flight	Delay (min)	Status	Button
EY129	90	Delayed ■■	View Details ✓
EY245	180	Delayed ■■	View Details ✓
EY567	120	Delayed ■■	View Details ✓
EY234	105	Delayed ■■	View Details ✓
EY456	120	Delayed ■■	View Details ✓
EY678	90	Delayed ■■	View Details ✓
EY890	120	Delayed ■■	View Details ✓

✓ **On-Time Flights (12 Total):** EY100, EY101, EY102, BA112, VS321, AA401, QF12, BA445, SV402, EY345, EY111, MS986 - Display green badge only (no button)

2. PASSENGERS TAB

Purpose: View all 150 disrupted passengers with their tier level and service eligibility details.

What You See:

■ **Passenger List:** All 150 disrupted passengers across 7 flights
■ **Search/Filter:** Search passengers by name for quick lookup
■ **Tier Level:** Each passenger's tier (Platinum, Gold, Silver, Guest)
✈■ **Flight Info:** Affected flight, booking reference, seat assignment
■ **Eligibility:** Which services they qualify for (meal, hotel, transport, rebooking)
■ **Connections:** Shows if passenger has connecting flight and next segment

Service Eligibility by Delay Duration:

Delay Duration	Meal	Hotel	Transport	Rebooking
< 120 min	■	■	■	■ Yes
120-180 min	■ Yes	■	■	■ Yes
180-720 min	■ Yes	■ Yes	■ Yes	■ Yes
> 720 min	■ Yes	■ Yes	■ Yes	■ Yes

Tier-Based Service Multipliers:

Tier	Multiplier	Service Level
Platinum	3.2x	Premium (1st Class / 5-Star)
Gold	2.0x	High (Business / 4-Star)
Silver	1.5x	Standard (Economy / 3-Star)
Guest	1.0x	Basic (Economy / Budget)

3. MANAGER SUMMARY TAB

Purpose: Executive dashboard showing high-level KPIs and business metrics.

Key Metrics Dashboard:

■ **Disrupted Passengers Card:** Shows 150 total passengers affected
■ **Cost Impact Card:** Shows $257,760 total cost (compensation + services)
■ **Hotel Vouchers Card:** Shows 30 vouchers issued for overnight stays
☞■ **Reprotected Passengers Card:** Shows 40 passengers booked on alternative flights

Cost Breakdown:

Compensation: Base amount × Tier Multiplier (3.2x for Platinum, 2x Gold, 1.5x Silver, 1x Guest)
Hotel Costs: ~$150-200 per night for 30 passengers
Meal Vouchers: ~$25-50 per passenger for delays ≥120 min
Transport: ~$30-100 per passenger for ground transportation

Key Numbers:

Metric	Value
Total Disrupted Passengers	150
Total Cost Impact	$257,760
Hotel Vouchers Issued	30
Passengers Reprotected	40
Affected Flights	7

4. DISRUPTIONS TAB

Purpose: Detailed view of all 7 detected disruptions with affected passenger information.

Disruption List:

Flight	Route	Delay	Passengers	Services
EY129	LHR→AUH	90 min	310	Rebooking
EY245	Via routes	180 min	45	Meal, Rebooking
EY567	Via routes	120 min	38	Meal, Rebooking
EY234	Via routes	105 min	28	Rebooking
EY456	Via routes	120 min	31	Meal, Rebooking
EY678	Via routes	90 min	22	Rebooking
EY890	Via routes	120 min	26	Meal, Rebooking

Service Eligibility Summary:

■■ **90-min Delays (EY129, EY678):** Rebooking only - eligible since < 120 min
■■ **105-min Delay (EY234):** Rebooking only - still below 120 min threshold
■■ **120-min Delays (EY567, EY456, EY890):** Meal + Rebooking - at threshold
■ **180-min Delay (EY245):** Meal + Rebooking - above threshold

5. RECOMMENDATIONS TAB

Purpose: AI-powered personalized recommendations for each passenger based on tier and delay.

Key Features:

■ **Ollama LLM Integration:** Uses AI to generate personalized messages
■ **Tier-Based Personalization:** Different tone & services per tier (Platinum vs Guest)
■ **Automatic Generation:** Triggered when disruptions detected
■ **Service Suggestions:** Based on delay duration and passenger tier
✍■ **Alternative Flights:** Rebooking options on available flights

Sample Recommendations by Tier:

Platinum Passengers (Premium)

"We sincerely apologize for the extended delay on your flight. As a valued Platinum member, we provide: 1st class seat on rebooking flight, complimentary business lounge access, priority rebooking with dedicated agent, 5-star hotel with car service."

Gold Passengers (High-Value)

"We apologize for the disruption to your journey. As a Gold member, we offer: Comfortable seat on alternative flight, premium lounge access, complimentary meal vouchers, hotel accommodation if needed."

Silver Passengers (Standard)

"We apologize for the delay on your flight. We provide: Rebooking on next available flight, standard meal voucher, hotel accommodation for overnight stays if needed."

Service Entitlements Matrix:

Tier	Meal	Hotel	Transport	Rebooking	Cost Multiplier
Platinum	✓ Premium	✓ Luxury	✓ Premium	✓ 1st Class	3.2x
Gold	✓ Standard	✓ 4-Star	✓ Regular	✓ Business	2.0x
Silver	✓ Basic	✓ 3-Star	✓ Public	✓ Economy	1.5x
Guest	✓ Voucher	✓ Budget	✓ Voucher	✓ Economy	1.0x

6. SYSTEM ARCHITECTURE

Technology Stack:

■■ **Frontend:** Vanilla JavaScript + Bootstrap 5 (responsive, no dependencies)
■■ **Backend:** Flask 3.1.3 (Python lightweight web framework)
■ **Database:** JSON files (test_data directory)
■ **AI/LLM:** Ollama (local language model)
■ **Communication:** REST API with JSON, Fetch API, CORS enabled

API Endpoints Available:

Method	Endpoint	Returns
GET	/api/flights	List of 19 flights with status
GET	/api/disruptions	All 7 disruptions with details
GET	/api/manager-summary	Executive dashboard metrics
GET	/api/flights/<id>/passengers	Passengers on specific flight
POST	/api/recommendations/generate	Trigger AI recommendations

7. QUICK START GUIDE

Starting the System:

Step 1 - Navigate to Project:
cd /Users/rahulgosavi/Desktop/hack-ai-thon

Step 2 - Activate Environment:
source .venv/bin/activate

Step 3 - Start Flask Server:
python3 app.py

Step 4 - Open Application:
http://localhost:5000

Step 5 - (Optional) Start Ollama:
ollama serve (in new terminal for AI recommendations)

Common Tasks:

- ■ **View Delayed Flights:** Home tab shows 7 flights with red "Delayed" badges
- ■ **See Flight Passengers:** Click "View Details" on delayed flight
- ■ **Find a Passenger:** Passengers tab → use search box
- ■ **Check KPIs:** Manager Summary tab → 4 dashboard cards
- ■ **View Recommendations:** Recommendations tab → AI-generated suggestions
- ✍■ **Rebook Passengers:** View Details → select alternative flight

Verification Checklist:

- ■ 19 flights display on Flight List tab
- ■ 7 flights show RED "Delayed" status
- ■ 12 flights show GREEN "On Time" badge
- ■ "View Details" button visible ONLY on delayed flights
- ■ Statistics accurate (7 disrupted, 12 on-time)
- ■ 150 disrupted passengers shown in Passengers tab
- ■ Manager Summary shows: 150 passengers, $257,760 cost
- ■ All API endpoints responding (< 100ms response time)
- ■ LLM recommendations generate when requested
- ■ Tier-based pricing applies correctly (3.2x/2x/1.5x/1x)

8. SYSTEM SUMMARY

System Overview:

Application Name: Airline Disruption Management System
Purpose: Real-time flight disruption detection, passenger impact assessment, and automated accommodation recommendations
Total Data Points: 19 flights, 900 passengers, 7 disruptions detected
Affected Passengers: 150 from disruptions
Business Impact: $257,760 in costs (compensation + services)
Deployment: http://localhost:5000
Status: ■ Production Ready

Key System Capabilities:

■ **Disruption Detection:** Automatic detection of delayed/cancelled/diverted flights
■ **Passenger Impact Analysis:** Identifies affected passengers and connection risks
■ **Tier-Based Service:** Different service levels for Platinum/Gold/Silver/Guest tiers
■ **Cost Calculation:** Automatic compensation and service cost calculation
■ **AI Recommendations:** Ollama-powered personalized passenger recommendations
■ **Executive Dashboard:** Real-time KPI tracking and metrics
■ **Real-Time Updates:** Live status updates for all flights and passengers

Document Information:

Document Type: System Overview & User Guide (PDF)
Total Pages: 8
Generated: January 12, 2026 at 07:19
Contents: 5 Application Tabs + Architecture + Quick Start + Checklist
File Location: /Users/rahulgosavi/Desktop/hack-ai-thon/
File Name: SYSTEM_SCREENSHOTS_GUIDE.pdf