FOR UNIVERSITIES AND AVIATION PROGRAMS

MAYDAY CONTROL

Teach airline management by letting students run an airline

A browser-based strategy simulation about maintenance, reliability and money. Students manage a fleet, absorb disruptions, compete for hubs, and then study a game summary that explains why they won or lost.

maydaycontrol.com | support@maydaycontrol.com

Why a simulation

Airline management courses explain that maintenance, scheduling, network design and cash are linked. Students rarely **feel** that link.

- Reliability decisions are made under uncertainty, and the cost shows up later and elsewhere
- A grounded aircraft is a maintenance problem, a revenue problem and a cash-flow problem at once
- Good strategy rests on trade-offs: spare parts or downtime, a new aircraft or a new route, a hub or a rival's hub
- A textbook case shows one outcome. A game lets students try the other choice and compare

What Mayday Control adds

- A shared, low-stakes setting for discussing airline operations
- Cause and effect students can see within one class period or across weeks
- A game summary that turns each game into evidence for discussion
- Online play, so students can play in teams from anywhere

OVERVIEW

The game at a glance

2 to 4
airlines per game, human or computer-run

$1,000,000
starting cash for each airline

$9,000,000
cash goal, one of three ways to win

4 ways to play
Quick Start, Easy, Medium and Hard

2 actions
per turn, then fly and spin

About 46 hubs
plus regional cities and 27 MRO stations

Students choose a home base, buy routes between cities on a 3D globe, buy aircraft, stock spare parts and fly. The game is about the work behind the flights, not the flying itself.

GAMEPLAY

How one turn works

The board: fleet on the left, the 3D globe under a real star sky, clickable cash and parts gauges on top, wheel and status board on the right

How to play in 8 languages: maydaycontrol.com/howto.html

1 Take up to 2 actions

Buy a route ($15k to $100k), buy an aircraft ($400k), buy a spare part ($50k), repair an open fault (needs a part and an MRO station), or trade with another airline.

2 Fly

An aircraft flies its route and earns revenue. Longer routes pay more.

3 Spin the event wheel

Six outcomes decide whether the flight is clean, restricted or grounded. A departures-style status board flips to show the result.

4 Resolve the result

Fly to an MRO station and use a spare part to clear the fault, or sit grounded.

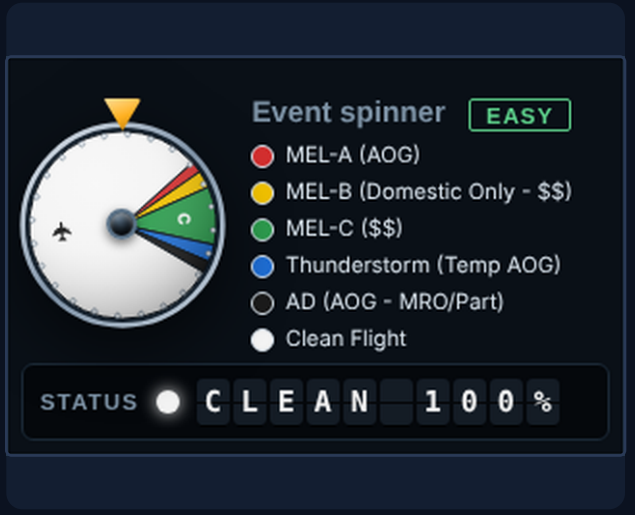
Try the guided tour

Realism: the event wheel

The six segments mirror real maintenance practice. Each flight ends with a spin.

Segment	What it represents	Effect in the game
White	Clean flight	Full revenue
Red: MEL-A	Deferral category A, aircraft on the ground (AOG)	No revenue; may only fly toward an MRO
Yellow: MEL-B	Deferral category B	Same-continent routes only, 50% revenue
Green: MEL-C	Deferral category C	Half revenue
Blue	Severe thunderstorm	Grounded for a turn, $50k fee
Black	Airworthiness directive	Diverted to an MRO, no pay, $50k clearing fee

Each slice carries a symbol (A, B, C, a lightning bolt for the storm, AD, a plane for a clean flight). When the wheel stops, the winning slice lights up and a split-flap **status board** flips its letters like an airport departures board: CLEAN 100%, MEL-B 50%, MEL-A AOG, STORM HOLD, AD DIVERT.



The wheel stops, the slice lights up, the board flips

Teaching point: an open fault stays on the aircraft until it is repaired, and faults stack: the worst one sets what the aircraft may do. The report tracks revenue lost to a fault left open from an earlier spin, so students learn when to pay now and when to defer.

STRATEGY DEPTH

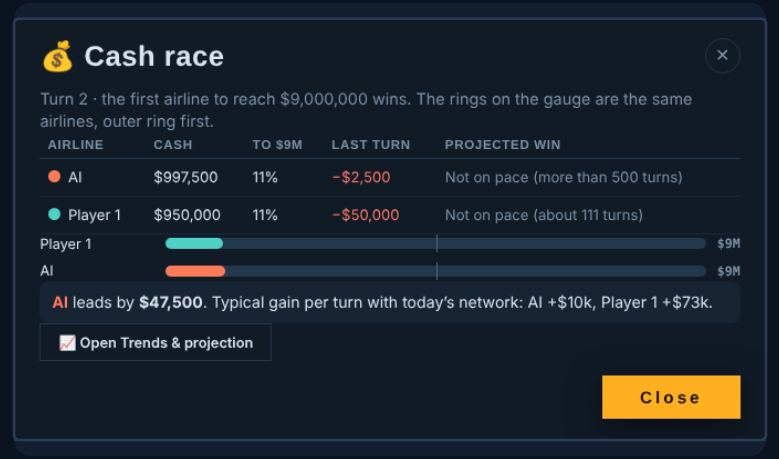
Network and economy

Route	Cost to buy	Revenue per flight
Short (regional)	$15,000	$20,000
Medium	$50,000	$80,000
Long	$100,000	$200,000

- **Hub feed.** A hub with more regional routes feeding it pays more per flight, from 50% to 100% of full revenue
- **Hub competition.** Each rival airline at the same hub cuts revenue by 25%, so network choices matter
- **Spare parts.** A shared bank of 40 parts at $50k; a fault can only be cleared with a part at an MRO station; a fitted part is overhauled and returns to its owner 3 rounds later
- **MRO access costs more.** A route to or from an MRO station costs 50% more, and an MRO city as home base costs $150,000, because repairs can only happen there
- **Grounding.** Each turn grounded costs $50k; a grounded aircraft can only fly toward an MRO, and one with no route to an MRO must be sold

Questions this raises

- Is a second route from my hub worth more than a third aircraft?
- When is it worth holding a spare part before a fault happens?
- Should I enter a rival's hub, or build my own?



Click the cash gauge for the cash race; the parts gauge opens the parts bank

SAME RULES, DIFFERENT RISK

Four ways to play

Wheel outcome (chance per spin)	Easy	Medium	Hard
White: clean flight	80%	50%	50%
Red: MEL-A (grounded)	2%	7%	7%
Yellow: MEL-B	3%	10%	10%
Green: MEL-C	10%	21%	21%
Blue: thunderstorm	3%	7%	7%
Black: airworthiness directive	2%	5%	5%

- **Quick Start**: a complete game in about 15 minutes, starting with a route already flying; the first airline to $3,000,000 wins. Same wheel as Easy, so it fits one class period
- **Easy**: a first game; learn the actions with few surprises
- **Medium**: adds sponsorship auctions (STAR deals) and a tougher wheel
- **Hard**: the Medium wheel plus fuel price swings and hedging; fuel decisions separate the winners

Suggested use

Open with Quick Start: one full game fits a 20-minute slot. Then move to Easy, Medium and Hard once students can explain their choices. Compare reports across levels.

STRATEGY DEPTH

More decisions to analyze

STAR sponsorship auctions

Medium and Hard. Airlines place sealed bids on seven business deals, such as a parts agreement, a government mail contract or a co-brand credit card. Sealed bids first, then a short live round to outbid the top bid. Teaches valuation and bidding under uncertainty.

Fuel and hedging

Hard level. Fuel prices move. Airlines can fix prices in advance or buy on the spot market, and fuel is shown against revenue in the report.

Computer airlines

AI airlines have different personalities, so a student can play alone or add rivals that behave differently from game to game.

Trading

Airlines can trade routes, aircraft and parts with each other, so negotiation is part of the game.

VICTORY CONDITIONS

How a game ends

Cash

Be the first airline to reach $9,000,000 in cash.

Network dominance

Hold 10 connected hub-to-hub routes across 3 or more continents, with 3 or more aircraft, none grounded, for 3 turns in a row.

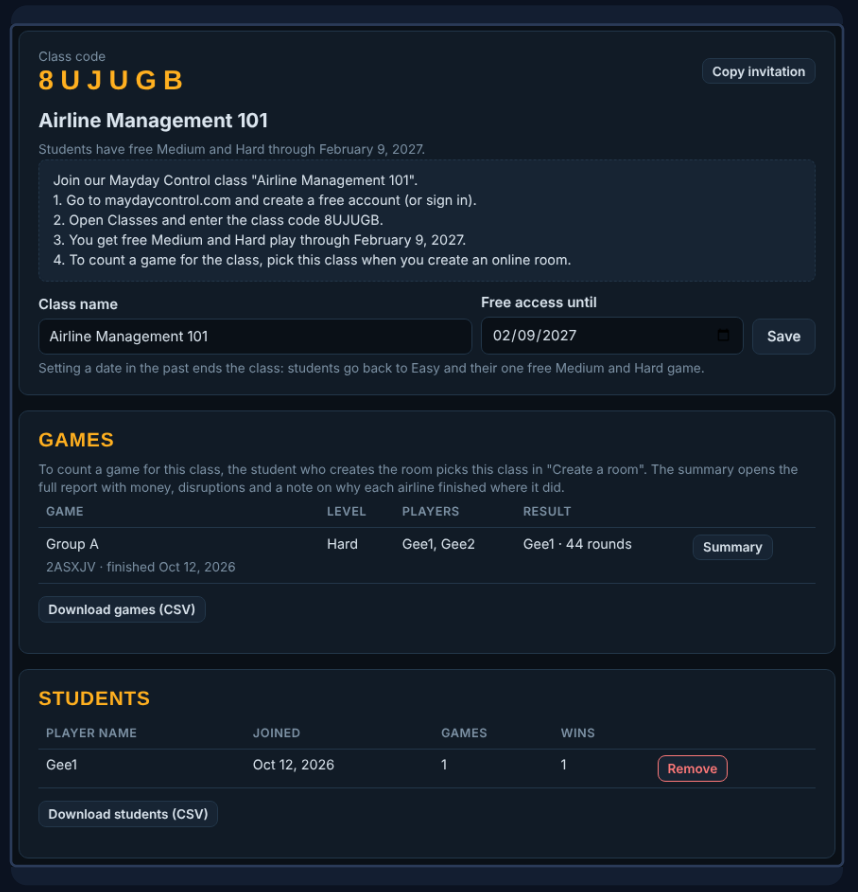
Last airline standing

All rivals run out of money and are eliminated.

Different ways to win encourage different strategies, and let an instructor ask students which one they were pursuing and why.

Playing online and in class

- **Rooms** are created with a six-letter code or a link; players can also find an open game
- **Turn limits** of 1 hour, 24 hours or 3 days let students play in short sessions or across a week
- **Join in progress** and an email alert when it is your turn
- **Room chat** with report, mute and block tools; players under 18 use private rooms only
- **Runs in a browser** on laptop, tablet or phone. Nothing to install
- **Solo or shared screen** against the computer, for practice
- **Tournaments** are planned each quarter, details to be announced

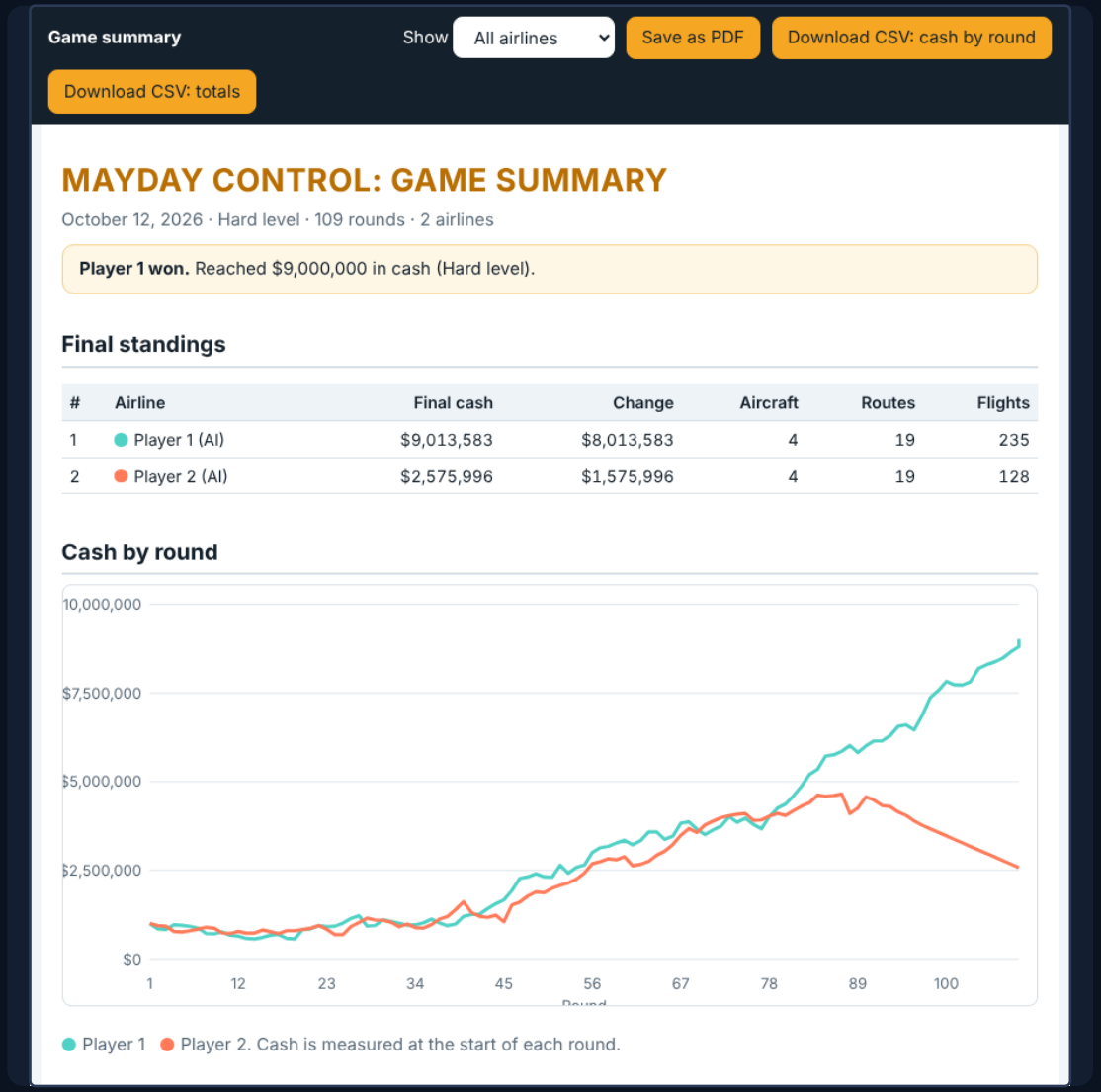


The class page: code, games and students

The post-game summary

When a game ends, a player or instructor can open a summary that shows **why** each airline finished where it did. Save as PDF or download as CSV for spreadsheets.

- Final standings and a cash-by-round chart
- Where the money came from and went: revenue, fuel, fees, repairs, parts, aircraft, routes, auctions
- Revenue lost to each kind of disruption and to hub competition
- Counts of flights, groundings and parts used
- A plain-language "why this airline won / finished where it did" note
- Key moments in order, and seven discussion questions
- A **progress report** with the same numbers can be opened at any time during a game



Sample: a computer-played Hard game, 109 rounds

REAL OUTPUT FROM A TEST GAME

Post-game report: a worked example

Where the money came from and went

Category	Player 1	Player 2
Route revenue	$17,390,000	$10,831,250
STAR contracts and mail pay	$313,750	$15,000
Fuel recovered in fares	$6,266,685	$3,864,132
Fuel (bought or settled)	-$6,121,853	-$4,479,367
Disruption fees (grounding, storm, AD, cargo penalty)	-$4,100,000	-$4,750,000
MRO service fees	-$2,970,000	-$1,110,000
Spare parts (bought, net of sales)	-$900,000	-$1,085,000
Aircraft purchases	-$1,200,000	-$1,200,000
Routes (bought, net of sales)	-$540,000	-$490,000
STAR contract bids	-$125,000	-$20,000
Change in cash over the game	**$8,013,583**	**$1,575,996**

Where the money went. Route revenue, fuel, fees, repairs, parts, aircraft, routes and auctions, side by side for each airline.

Player 1 (AI) Winner

Why this airline won

What helped

- Flew more often: 2.2 flights a round against 1.2 for the others. More aircraft in service, and fewer sitting grounded, means more revenue.
- Fuel took only 26% of revenue, against 30% for the others.

What held it back

- Lost about $3,050,000 (11% of revenue) sharing hubs with rival airlines. Choosing hubs and routes rivals do not use avoids this.
- Paid $64,862 a round in grounding, storm and MRO fees, against $53,761 for the others. Parts bought ahead of time can replace paid MRO visits.

Player 2 (AI) Place 2

Why it finished 2nd

What helped

- Paid only $53,761 a round in grounding, storm and MRO fees, against $64,862 for the others.

What held it back

- Flew less often: 1.2 flights a round against 2.2 for the others. Fewer aircraft, or aircraft stuck on the ground, means less revenue.
- Fuel took 30% of revenue, against 26% for the others. Fixed-price contracts and buying when the market is low protect margins.

Why each airline finished where it did. The notes compare each airline with the average of the others. Here the winner flew 2.2 times a round against 1.2, despite paying more in fees. The notes explain the numbers; they do not judge every decision.

Both airlines in this sample game were played by the computer. Figures are generated by the game from its own record of each flight and purchase.

Discussion questions built into every report

- How did each airline handle MEL and AOG events? Who held spare parts, who reached an MRO fastest, and which choice cost less over the whole game?
- Which airline built the strongest network, and why? Look at hubs, routes shared with rivals and aircraft count.
- Find the round where the cash lines cross. What decision or event caused it? Could it have been predicted?
- Which spend gave the best return: aircraft, routes or spare parts?
- Which risks were insured by reserves, and which were left open? How much cash is a safe reserve?
- How did the STAR sealed bids work out? Did the winner overpay?
- How exposed was each airline to fuel prices? Compare fixed contracts, tank purchases and spot buying.

Classes and instructors

- An instructor creates a class and gets a **six-character class code**
- Students create a free account and enter the code. **Medium and Hard are free** to them while the class is open
- Students pick the class when creating an online room, so the game is counted for the class
- The class page lists **games, levels, players and winners**, and opens each game summary
- Download games and students as CSV
- The instructor sets the date when access ends

Privacy and approvals

- Instructor accounts are approved one by one
- Instructors see usernames and game results only, not emails
- Players under 18 use private rooms only
- Minimum age 13; parental consent for ages 13 to 17
- In-game dollars are score only, never real money

SUGGESTED ALIGNMENT

Learning outcomes and course fit

Students can...	Where it shows up in the game
Explain how maintenance deferrals affect operations and revenue	MEL categories A, B, C and AOG on the event wheel
Weigh spare parts against downtime and MRO access	Parts bank, MRO stations, stuck aircraft, grounded fees
Design a route network around hubs	Hub feed, hub competition, route lengths
Manage cash, reserves and risk	Starting cash, fees, reserves, Hard-level fuel exposure
Evaluate bids and long-term contracts	STAR auctions, fuel contracts
Use data to explain results	Game summary and CSV files

Fits courses in airline management, aviation maintenance management, aviation operations, supply chain and operations management, and introductory strategy.

AN HONEST VIEW

Benefits and challenges

Benefits

- Active learning: students make choices and live with them
- Risk and trade-offs made visible, safely
- Every game can be reviewed with its own data
- Works online, so no lab or installation
- Free for students while enrolled in a class
- Competition and teams keep engagement high

Challenges and limits

- A full game takes time; plan for several sessions or use turn timers
- The wheel adds luck, so one game does not prove skill; compare several games
- The setting is simplified and fictional. It teaches concepts, not procedures
- Revenue-loss figures in the report are estimates from recorded flights
- Needs an internet connection and a modern browser
- Class-wide combined analysis and rosters are not available yet

About the creator

Juan Fernando Juliao

Senior engineering manager, commercial aviation

- **20+ years** in commercial aviation engineering, from airline fleet reliability to aircraft-manufacturer service engineering and certification
- **Career** includes Continental Airlines, United Airlines, Zodiac, UPS Air Group, an aircraft manufacturer and Atlas Air
- Leads global, multi-disciplinary teams accountable for **airworthiness, regulatory compliance and safety management**
- Directs heavy-maintenance and MRO engineering work and manages multi-million-dollar budgets
- Has taken part in aircraft accident investigations and represented an airline on winter-operations safety standards
- **B.S. Aerospace Engineering** and **M.S. Engineering Management**, Embry-Riddle Aeronautical University; MBA student
- Fluent in English and Spanish

Why this game: Mayday Control puts the daily tension of aviation work, reliability against maintenance against money, into a game students can play, discuss and learn from.

Employers are listed as work history only. Mayday Control is an independent project, not affiliated with, sponsored by or endorsed by any of them.

NEXT STEPS

Getting started

1

Try it

Try it free at maydaycontrol.com: every level includes one free game, no account needed. Solo against the computer takes minutes to learn.

Try the guided tour

How to play (8 languages)

2

Request instructor access

Email us. Instructor accounts are approved individually.

3

Create a class

Share the class code with students. They join free for the class period.

4

Run and debrief

Students play online. Use the game summaries and discussion questions in class.

Access and pricing

- Student access is free while they are enrolled in a class
- Individual players: every level includes one free game with no account needed; after that, membership is $7.99 per month or $29.99 per year
- Institutional terms (class sizes, billing, semester access) are to be agreed with each university

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