

AVOPSIM MANUAL

Getting Started

7 articles · Complete website edition

Includes all article text, tables and available illustrations. Videos and interactive resources are linked. Printed page numbers restart with each article. Use the clickable contents or PDF bookmarks to navigate.

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Welcome to AVOPSIM

AVOPSIM is a cost-effective simulator for ground personnel training in airside vehicle operations. It runs on a modified version of Microsoft Flight Simulator 2024 as the simulation engine, so the budget goes into reproducing your airfield, your vehicles and your procedures accurately, not into building and maintaining a simulation engine.



Terminal and stands on the AVOPSIM digital twin.

Who this knowledge base is for

This documentation is written for the people who run and use AVOPSIM at an airport:

- **Training managers** planning programs, cohorts and stations.
- **Instructors and examiners** who author missions in the Mission Editor and run sessions from the Examiner Console.
- **Trainees** preparing for airside driving and specialist vehicle qualifications.
- **IT and facilities teams** installing and maintaining training stations.

How the documentation is organized

Manual	What it covers
Getting Started	What AVOPSIM is, the four software layers, the training programs and key terminology.

Manual	What it covers
Stations & Hardware	Desk stations, driving stations and full vehicle cabins, with requirements and setup.
Instructor Tools	Missions, the Mission Editor, the Examiner Console, scoring and debriefing.
Training program manuals	One manual per program: airside driver training, ARFF, ground handling, boarding bridge, snow removal, deicing and AI radio communication.
Deployment & Integration	How an airport integration is scoped, modeled, delivered and kept current, with case studies.
FAQ & Support	Common questions and how to reach the AVOPSIM team.

Note

Press Ctrl + K (or ⌘ + K on a Mac) on any page to search every manual. Each article can also be downloaded as a PDF, and each manual is available as a complete PDF.

Why simulate

Airside driver training normally means an instructor, a vehicle out of service and a live apron. AVOPSIM moves the learning, the mistakes and the repetition into a classroom.

1. **Higher first-attempt pass rates.** Trainees learn the layout, signage, hold points and hotspots of their own airfield before the practical exam. Fewer re-tests, less instructor time.
2. **No vehicle out of service.** Route familiarization and procedure practice happen at a training station, not in an operational vehicle on an active apron burning fuel.
3. **Mistakes without consequences.** Runway incursions, missed hold points and incorrect phraseology are made in the simulator, logged, and debriefed.
4. **Less supervision per trainee.** One instructor monitors several stations from the Examiner Console. Missions pass or fail automatically against the constraints you configure.
5. **Low cost of ownership.** Using Microsoft Flight Simulator as the engine keeps development and maintenance cost low.
6. **Train ahead of change.** A new taxiway, a relocated stand or a construction closure is added to the digital twin so drivers learn the new routing before it goes live.

Getting Started

What is AVOPSIM?

AVOPSIM (Airside Vehicle Operators Simulator) is a training simulator for everyone who drives or operates equipment airside. Trainees drive a **1:1 digital version of their own airport**, in vehicles modeled on their own fleet, following the procedures of their own airport and authority.



The standard AVOPSIM driving station, as installed at Edmonton International Airport.

The idea in one paragraph

Airports have two conventional options: train in the vehicle, or buy a proprietary-engine simulator with a vendor-specific cabin. AVOPSIM is a third option. It reuses Microsoft Flight Simulator 2024 for the world, weather, lighting and physics, and concentrates on the part that matters for training: an accurate reproduction of your airfield, your vehicles and your procedures, plus the instructor tooling to run and assess missions on it.

What you get

- **A digital twin of your airfield.** Runways, taxiways, aprons, service roads, buildings, signage, markings and lighting, reproduced from operational drawings and survey data.
- **Your fleet, modeled per unit.** Operations pickups, ARFF vehicles, winter units, ground support equipment and boarding bridges, in your livery, with modeled cabins and specialist functions.

- **Scored missions.** Scenarios built on your routes and procedures that pass or fail automatically against the constraints you configure.
- **Instructor tools.** The [Mission Editor](#) to author scenarios and the [Examiner Console](#) to launch, monitor and assess several stations at once.
- **Hardware that scales.** The same software runs on a [desk station](#), a [driving station](#) or a [full vehicle cabin](#).

Modular by design

AVOPSIM is modular. Start with [airside driver training](#) and add specialist programs as your fleet and your requirements grow. Every program runs on the same digital twin and the same stations. See [Training programs](#) for the full list.

Caution

AVOPSIM is a training aid. It is not certified or approved by the FAA, EASA, Transport Canada or any other authority, and it does not replace the training, examination or permit your regulator requires. See [Regulatory status](#).

Software architecture

AVOPSIM is four software layers on one engine, running on three hardware configurations. The same software runs on every configuration, so a program can start on a laptop and move to a full cabin without changing anything but the station.

Each layer builds on the one below it. Microsoft provides the core; AVOPSIM provides the three above.

Layer	Name	Provided by
01	Core: Microsoft Flight Simulator 2024	Microsoft and Asobo
02	Scenery: the airport digital twin	AVOPSIM
03	Vehicles: your fleet, modeled per unit	AVOPSIM
04	Mission module: missions, Mission Editor and Examiner Console	AVOPSIM

01 · Microsoft Flight Simulator 2024



The simulation engine. Global terrain, live and preset weather, a full day and night cycle, vehicle physics, multi-screen and VR support, maintained and updated by Microsoft and Asobo. AVOPSIM does not rebuild any of this, which is where the cost saving comes from.

- Photorealistic world outside the airport boundary
- Live or preset weather: rain, snow, fog, wind, visibility
- Day and night cycle, any season
- Licensed separately, Standard Edition

02 · The airport digital twin



Your airfield reproduced 1:1 from operational drawings and survey data and loaded into the engine as scenery: runways, taxiways, aprons, service roads, buildings and terrain, with signage, markings and lighting placed as on the live airfield.

- Signs, markings, hold points and hotspots
- Centerline and edge lights, stop bars, guard lights, apron floods
- Terminal, hangars, fire station and landmarks
- Updated when the airport layout changes

See [The airport digital twin](#) for how it is built and maintained.

03 · Your fleet, modeled per unit

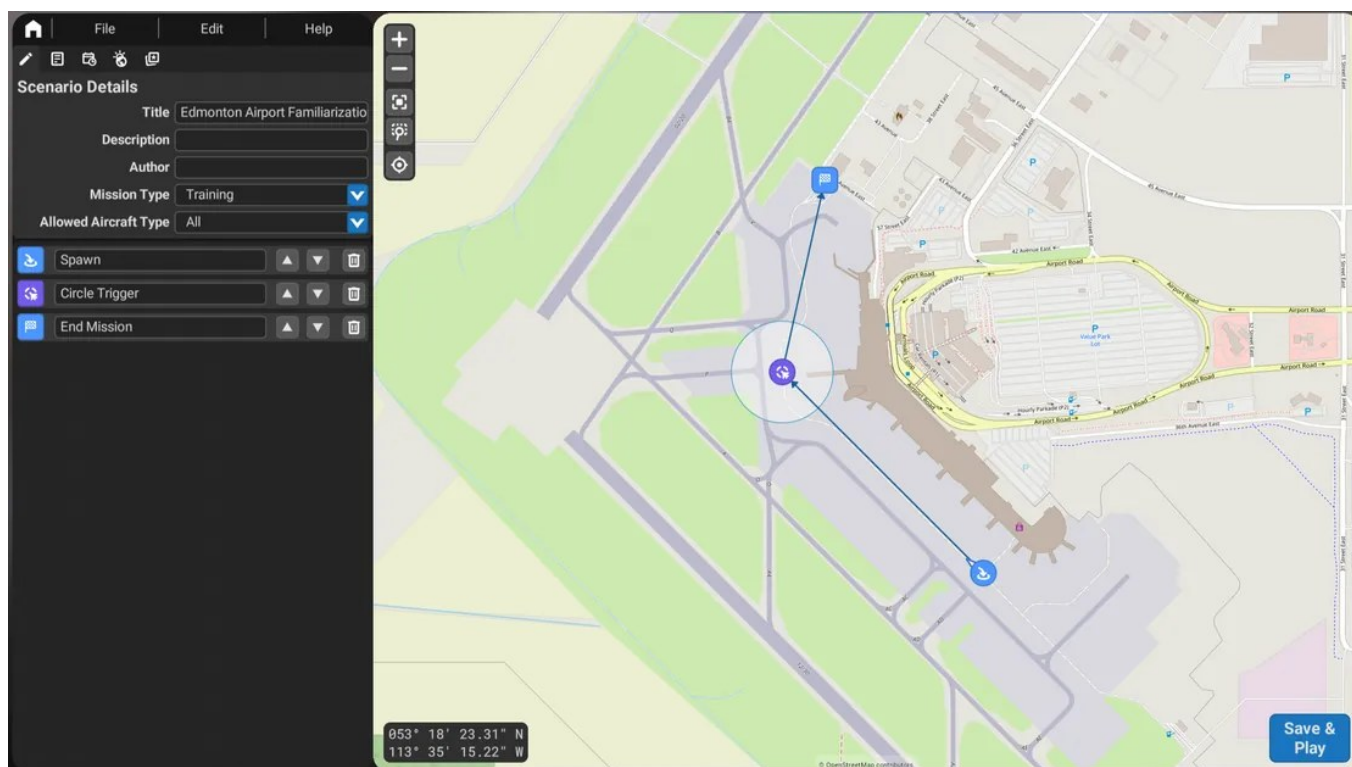


Drivable vehicles matched to the airport fleet in its own livery: dimensions, acceleration, braking, steering and traction, a modeled cabin with working instrumentation, and the specialist functions each unit performs.

- Operations pickups, ARFF, winter units, GSE, boarding bridges
- Cabin instrumentation and controls
- Plow, broom, blower, belt, tow, turret and boom functions

See [Vehicle modeling](#).

04 · Missions, Mission Editor and Examiner Console



The training layer. Scored missions built on your routes and procedures, an editor for instructors to author new scenarios on the airport map, and a web console to launch, monitor and assess several stations at once.

- Missions delivered in blocks of 20, extended by your instructors
- Moving aircraft and vehicle traffic, triggers and conflicts
- Pass and fail constraints, violations and timings logged
- Examiner Console: one instructor, several stations, records kept

See the [Instructor Tools](#) manual.

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Training programs

One platform, seven training programs. Every program runs on the same digital twin and the same stations, so you can start with airside driver training and add specialist programs as your fleet and your requirements grow.

Program	Focus	Status
Airside driver training (AVOP)	Pre-certification and recurrent training for anyone who drives airside.	Available. Core program
ARFF and rescue	Response driving and vehicle positioning for aircraft rescue and firefighting crews.	Subscription program
Ground handling and GSE	Equipment operation in the constrained space around a parked aircraft.	Available. Included in the integration
Passenger boarding bridge	Docking practice for bridge operators without an aircraft at the gate.	New program. Pilot installations
Snow removal	Runway and apron clearing that is hard to practice until the season has started.	Subscription program
Deicing operations	Deicing and anti-icing vehicle operation at the stand and on the deicing pad.	Beta. Subscription program
AI radio communication	Radio phraseology practice with a virtual ground controller, using speech recognition.	Beta. Subscription program

What comes with every program

- **1:1 digital twin.** Your airfield, signage, lighting and buildings, reproduced from real-world data.
- **Microsoft Flight Simulator 2024 engine.** World, weather and physics maintained by Microsoft and Asobo.
- **Modular and scalable.** Add programs, vehicles and stations as you go, from desk station to full cabin.
- **Turn-key delivery.** Hardware, software, installation, instructor training and one year of support.

Custom programs

Any airside task that involves a vehicle and a procedure can become a scored mission on your digital twin. Examples include:

- Follow-me and marshalling
- Wildlife and FOD patrols
- Perimeter and security driving
- Airport-specific procedures

Write to support@avopsim.com to scope a custom program.

Glossary

Terms used throughout the AVOPSIM documentation.

Term	Meaning
AVOP	Airside Vehicle Operator Permit. The permit an airport issues to people who drive airside. AVOPSIM's core program prepares trainees for the AVOP practical exam.
AVOPSIM	Airside Vehicle Operators Simulator. The training platform described in this knowledge base.
ARFF	Aircraft Rescue and Firefighting.
Digital twin	The 1:1 reproduction of an airport's airfield, buildings, signage, markings and lighting, loaded into the simulation engine as scenery.
Examiner Console	The web application instructors use to launch missions, monitor several stations at once and assess competency.
GSE	Ground Support Equipment: belt loaders, pushback tractors, tugs and carts, fuel and catering trucks.
Hold point	A marked position where a vehicle must stop and obtain clearance before proceeding, typically before a runway or taxiway.
Hotspot	A location on the airfield with a history or risk of collisions or runway incursions, where extra attention is required.
Mission	A scored training scenario: a route or task on the digital twin with traffic, weather, time of day and pass/fail constraints.
Mission Editor	The tool instructors use to author new missions on the airport map without programming.
Mission module	The AVOPSIM software layer that contains missions, the Mission Editor and the Examiner Console.
MSFS 2024	Microsoft Flight Simulator 2024, the simulation engine AVOPSIM runs on. Licensed separately.
Runway incursion	Any unauthorized presence of a vehicle, person or aircraft on a runway. Flagged and scored in AVOPSIM missions.
Station	A training position running AVOPSIM: a desk station, a driving station or a full vehicle cabin.
Tier 1 / 2 / 3	Desk station, driving station and full vehicle cabin respectively.
Type I / Type IV fluid	Deicing fluid (Type I) and anti-icing fluid (Type IV), applied in sequence in the deicing program.

Regulatory status

Caution

AVOPSIM is a training aid. It is not certified or approved by the FAA, EASA, Transport Canada or any other authority, and it does not replace the training, examination or permit your regulator requires.

AVOPSIM prepares trainees for those requirements and gives your training department objective records. Missions pass or fail against constraints your airport configures, and results are kept in the training record in the [Examiner Console](#).

AI radio communication

The [AI radio communication](#) program is not an air traffic service. The virtual ground controller is a training aid, and trainees follow the phraseology published by their airport and authority.

Simulation limits

The simulation reproduces your airfield, vehicles and procedures as closely as the source data allows. It remains a simulation: vehicle handling, weather and traffic are models of reality. Always follow your airport's operating procedures, vehicle manuals and instructor direction in live operations.

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About AVOPSIM

AVOPSIM is developed and supported by Vantech North America LLC and YYC Technologies International LTD.

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