

# SIMULATION FLIGHTSIM

CREATE. SET. SOAR.

\ **FlightSIM** is the industry-leading high-end COTS for creating high-fidelity, high-quality flight dynamics simulations.



**PRESAGIS**  
MAKE IT REAL

**FlightSIM is the industry-leading high-end COTS for creating high-fidelity, high-quality flight dynamics simulations and systems for virtually any fixed-wing aircraft in the world – military, commercial, or unmanned.**

## BENEFITS



### WIDE CHOICES OF ENGINES IN SINGLE APPLICATION

Choose from turbojet, turbofan, turboprop, turboshaft, piston, electrical, or other user-defined performance engines. FlightSIM supports up to 8 engines.



### INCLUDES SYSTEMS AND SUB-SYSTEMS

Aerodynamics, Weight and Balance, Undercarriage, Hydraulic and Electrical systems, Navigation Systems, Flight Controls, Weather and more.



### QUICK AIRCRAFT CUSTOMIZATION

Lets you easily change flight models or parameters or swap out aircraft.



### RAPID INTEGRATION

Can connect to any flight simulation framework out-of-the-box through CIGI, HLA, DIS, local shared memory, or networked shared memory.



### FLEXIBLE

Create models of virtually any fixed-wing aircraft including UAVs.



## WHY FLIGHTSIM?

From building and evaluating simulators, training equipment, and cockpits to developing part-task trainers, FlightSIM offers developers fast development times, quick customization, and rapid integration into a given simulation framework. This is achieved through an expanded set of tools that help you build fidelity-critical simulation applications.

An easy-to-use interface lets you easily tailor flight simulation and systems by entering aerodynamics, weights and balance, ground interactions, and environmental parameters into windows and dialog boxes rather than writing software routines.

FlightSIM lets you specify subsystems behavior, including flight management systems, autopilot, and flight controls.

Maximize FlightSIM by easily integrating virtual and/or real hardware devices and user-development simulation models and allow unparalleled interoperability and integration.



# FLIGHTSIM FEATURES

Conceive and deploy a complete aerodynamic model for the real-time simulation of any fixed wing aircraft with or without OEM data and without writing a single line of code.

Test both aircraft design and aircraft performance under controlled simulated conditions.

Specify the behavior of systems and sub-systems.

Automatic Flight Control Systems including Flight Management Systems, Auto Throttle System, Flight Control Computer, etc.

Easily integrate virtual and/or real hardware devices and user-development simulation modules. Effortlessly enhance, modify or substitute for user defined parameters. For example, a developer can add proprietary landing gear.

Quickly and easily tailor flight simulations by entering aerodynamics data in its native format via environmental parameters in windows and dialog boxes without having to write software conversion routines.

## AERODYNAMICS MODELING CAPABILITIES

Define each control surface on the aircraft through the graphical interface by defining as many points for which there is data available

Specify each control law that converts pilot inputs into control surface deflections

Define the impact of the surface deflection on the aerodynamic coefficients

Specify the number of installed engine(s)

Specify external fuel load, landing gear, AFCS and electrical and hydraulic buses

Simulate aircraft driven by turbojet, turbofan, turboprop, turboshaft, piston engines or by a user customized performance engine:

- Large transport
- High speed fighter and surveillance jets
- Small private jets
- Commercial airliners
- Remotely Piloted Vehicle / UAVs

### Visual Studio 2015 (VC 14) Support

API developers can use a more recent version of Microsoft Visual Studio tools.

## HOW FLIGHTSIM HELPS

- **Modular:** FlightSIM's architecture provides the ability to achieve the highest degree of fidelity for any component and subsystem of the aircraft.
- **Flexible:** With FlightSIM, it is possible to :
  - Reuse existing model's components;
  - Build upon the existing model's components;
  - Replace the model's components by a new one;
  - Add any new model's components.
- **Extendable:** Enables components to be developed with third-party COTS software or user customizable code.
- **Optimized Numerical Design Software:** Run your simulation at a rate higher than 1000 Hz, without affecting CPU demand.
- **Fully documented API:** FlightSIM allows users to take the full control of the simulation, and prepare scenarios up-front or to change them in real time in the aircraft Environment, including NAVAIDS based on ARINC 424.
- **Open Connectivity:** With any CGF through DIS, HLA, nCom or API protocols.
- **Mature Architecture:** Allows FlightSIM users to achieve a true level of fidelity and quality.
- **Engine Model:** FlightSIM is furnished with a high performance thermodynamic model.
- **Intuitive & Adaptable Interfaces:**
  - Build six DOF (Degree Of Freedom) aerodynamic equations.
  - Build Control Surfaces definitions and equations for the FC (Flight Control).
  - Build AFCS (Automatic Flight Control System) inner loop.
- **Complete Dynamic Tests Environment:**
  - Capacity to rehearse and replay actual or customized flight tests.
  - Users can maintain their development resources to evolve their simulations.
- **Tools for the Professional:** FlightSIM is fully backed with product maintenance, customer support and training.

# ADDITIONAL FLIGHTSIM COMPONENTS

Tool to build nav aids database according to the ARINC424 standard.

- Use of multiple receivers (DME, VOR, ADF, TACAN and ILS) to interact with nav aids stations specified with a database following the ARINC424 standard.
- Linearization tool to uncover the aircraft's natural oscillation frequencies to assist in designing its control system (state matrices A and B).
- Access to engine performance curves
- Access to each Control Law
- Monitoring mechanism to validate the evolution in time of specific parameters.
- Testing instrument to support the AFCS tuning and to force specific conditions to validate the aircraft's flight model.
- Malfunction scenarios accessible out-of-the-box. In addition to a user's ability to create their own malfunctions, there are more than 100 situations already available, including engine-out, engine flameout and hydraulic failures.
- Operator can begin simulation in different conditions.
- Record and playback all pilot interactions during a flight. Snapshot and restore the aircraft to its exact state from any prior sequence in time.
- Multiple methods of pilot input ranging from mouse and keyboard to USB ports to a VAPS XT application. Moreover, an API is provided to build new sources and thereby allowing integration with high-end control loaders.

# FLIGHTSIM DETAILS

## WEIGHT & BALANCE SYSTEM

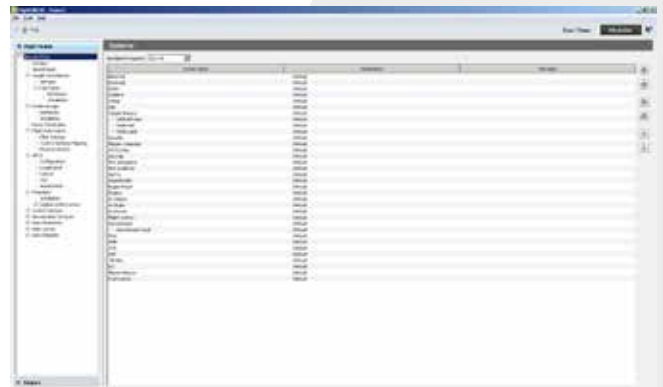
Considering factors such as impact of landing gear positions, fuel consumption and additional loads (cargo, missiles, pilots, passengers, etc.). Furthermore, fuel tanks of different sizes can be defined and installed on the aircraft, and additional loads can be modified at runtime.

## ENVIRONMENTAL CONDITIONS

Considering factors such as impact of landing gear positions, fuel consumption, and additional loads (cargo, missiles, pilots, passengers, etc.). Furthermore, fuel tanks of different sizes can be defined and installed on the aircraft, and as additional loads can be modified at runtime.

## GROUND INTERACTION

Ability to taxi, including landing and takeoff, on uneven terrain and moving platforms.



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