PRESAGIS
\ MAKE IT REAL

SIMULATION
HELISIM
CREATE. SET. HOVER

\ **Heli**SIM **is a professional tool that primarily offers an intuitive interface to create and configure rotary-wing aircraft flight dynamics models and systems. This powerful software allows you to simulate virtually any rotary-wing aircraft suited for a flight training or research environment.**

WHY HELISIM ?

From building and evaluating simulators, training devices, and cockpits to developing procedural trainers, HeliSIM 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 intuitive interface lets you easily tailor flight simulation models and systems by entering aerodynamic, weight and balance, ground interaction, and environmental parameters into window and dialog boxes rather than writing software routines.

HeliSIM lets you specify subsystems behavior, including the Flight Management System (FMS), autopilot system, and flight control laws.

Maximize HeliSIM by easily integrating virtual and/or real hardware devices and user-developed simulation modules that allows unparalleled interoperability and integration.

BENEFITS

INTUITIVE UI FOR MULTI-DISCIPLINARY TEAMS

Easily create or edit your rotorcraft models and systems using the enhanced HeliSIM UI. Choose from a selection of tools to compare, view, and modify your helicopter profiles, all without having to write a single line of code.

FLEXIBLE INTERFACE TO ADD DATA PACKAGES IN ANY FORMAT

Freedom to add your data package, regardless of the format, with the HeliSIM interface.

SLUNG LOAD SIMULATION MODEL

Design, configure and hook a slung load to any rotorcraft model. Configure the aerodynamic characteristics of the slung load, just like any other aerodynamic surface.

ROTORCRAFT SYSTEMS SIMULATION

Simulation and configuration of the Automatic Flight Control Systems (AFCS), gearbox, radio navigation equipment, and many more systems.

RAPID INTEGRATION

Connect to any simulation framework out-of-the-box through CIGI, HLA, and DIS. Integrate HeliSIM with third-party software such as MATLAB® and X-Plane®.
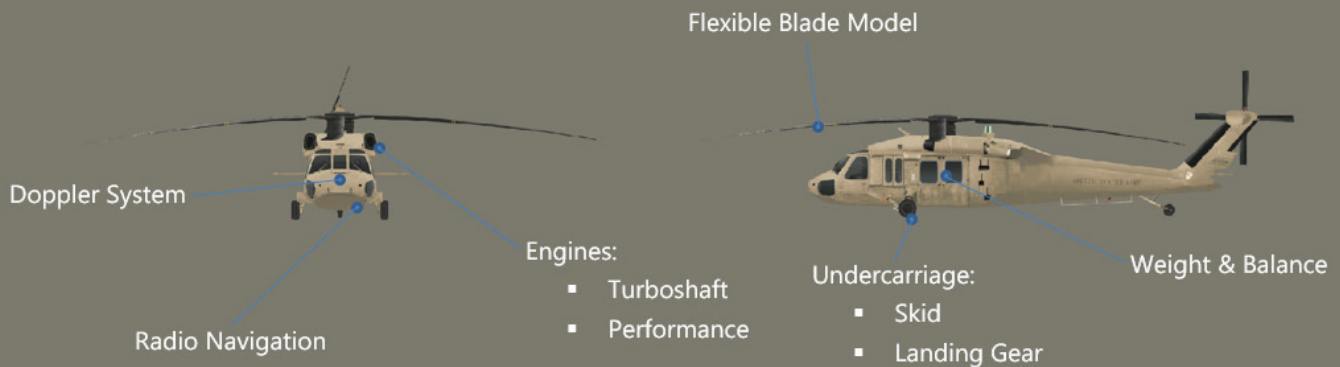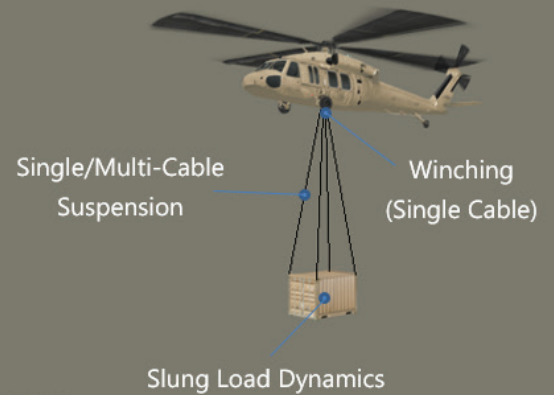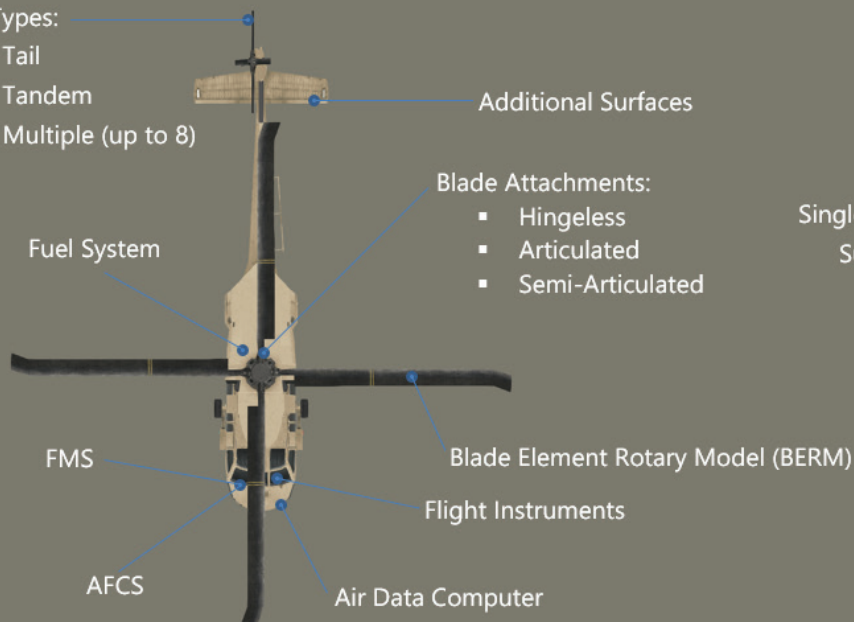
HELISIM
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HELISIM SYSTEMS OVERVIEW

Rotor Types:
- Tail
- Tandem
- Multiple (up to 8)

Additional Surfaces

Blade Attachments:
- Hingeless
- Articulated
- Semi-Articulated

Fuel System

Single/Multi-Cable Suspension

Winching (Single Cable)

Slung Load Dynamics

FMS

Blade Element Rotary Model (BERM)

Flight Instruments

AFCS

Air Data Computer

Flexible Blade Model

Doppler System

Engines:
- Turboshaft
- Performance

Undercarriage:
- Skid
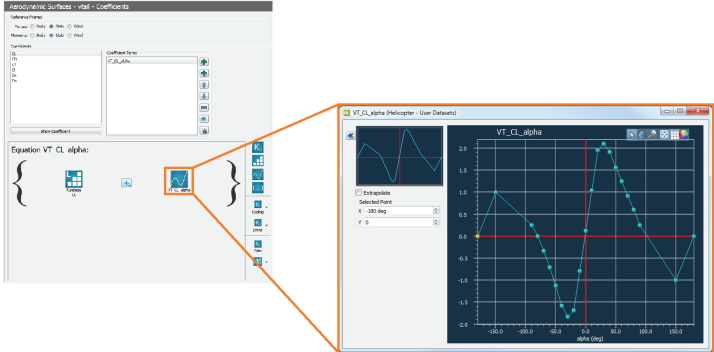- Landing Gear

Weight & Balance

Radio Navigation

HELISIM
FEATURES

\ AERODYNAMICS MODELING CAPABILITIES

Conceive and deploy a complete 6 DOF aerodynamic model for the real-time simulation of any type of rotary-wing aircraft:

- With OEM data: HeliSIM allows you to create a high-fidelity flight dynamics model

- With limited or no OEM data: you can create your flight dynamics model using one of the included helicopter models with HeliSIM

Create as many distinct aerodynamic surfaces for your helicopter model using any frame of reference to define your aerodynamic coefficients.

\ ROTOR AND SWASHPLATE SIMULATION

Create a basic rigid blade type, or, opt for the more advanced flexible blade model, including specifying the flexible rotor blade's mechanical properties.

Configure your rotor blades with the following types of blade attachments:

- Hingeless
- Articulated
- Semi-Articulated

Define the rotor blade's aerodynamic parameters including blade twist, ground effect, lift, and drag coefficients.
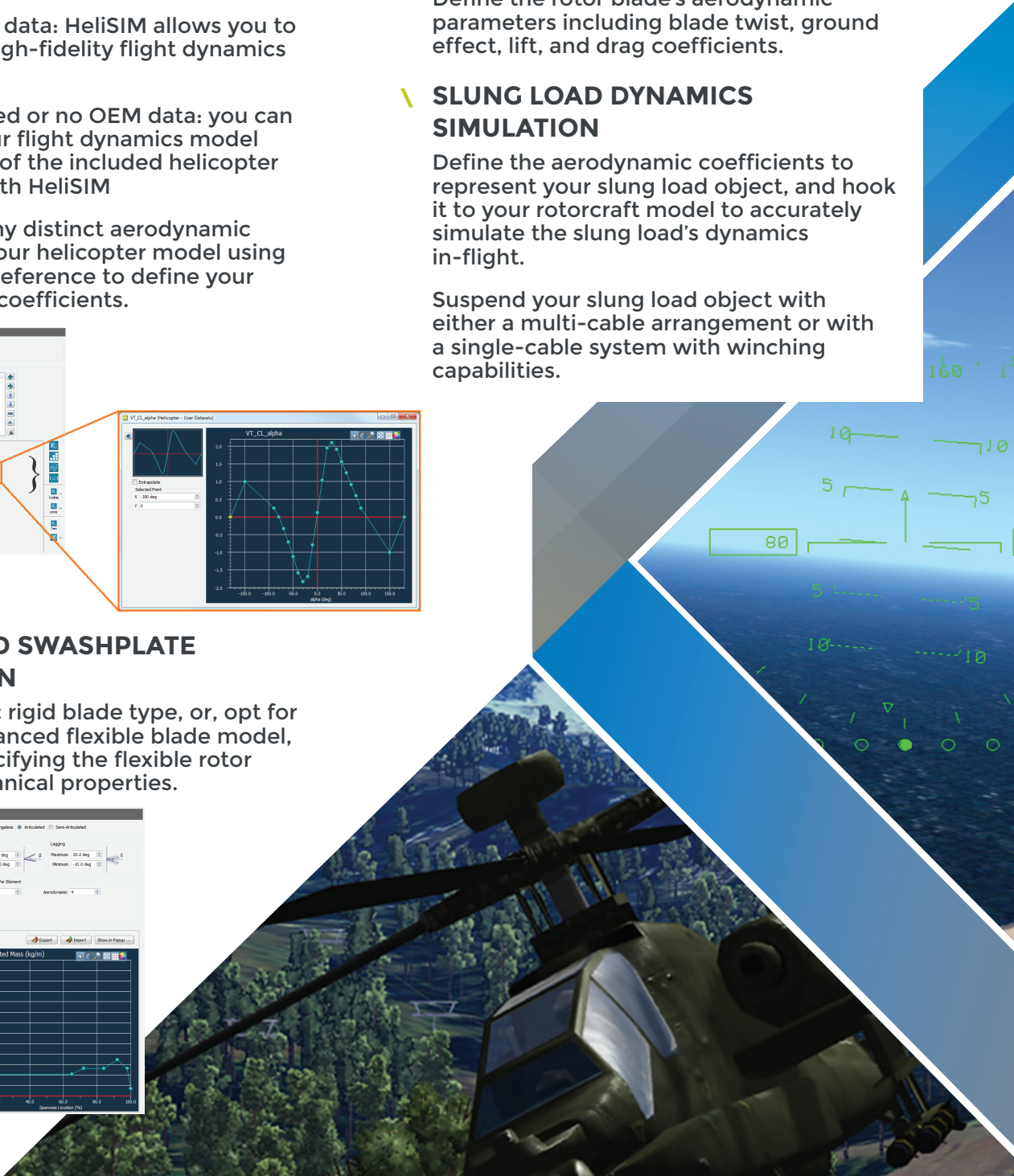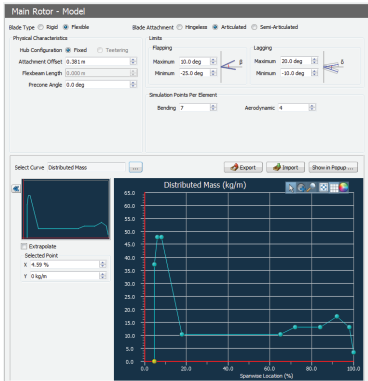
\ SLUNG LOAD DYNAMICS SIMULATION

Define the aerodynamic coefficients to represent your slung load object, and hook it to your rotorcraft model to accurately simulate the slung load's dynamics in-flight.

Suspend your slung load object with either a multi-cable arrangement or with a single-cable system with winching capabilities.

## \ DEVELOP AND MAINTAIN YOUR OWN FLIGHT CONTROL LAWS

Specify each flight control law that converts pilot and autopilot inputs into flight control surfaces deflections using the enhanced equation editor.

The built-in AFCS system can be used to create and tune your inner and outer loop control laws. Use the HeliSIM Linearization tool to obtain the rotorcraft's natural oscillation frequencies in order to help you design the rotorcraft's flight control system.
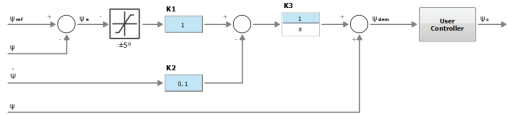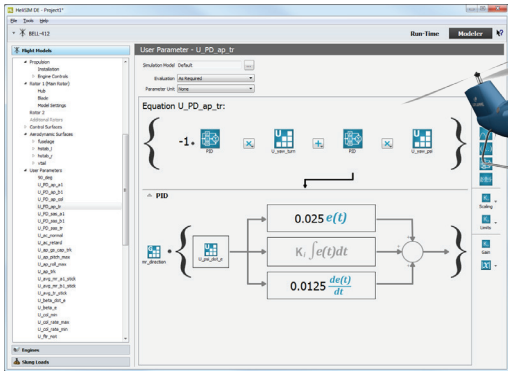
\ TEST AND VALIDATE YOUR MODELS

Test rotorcraft performance, dynamics, and handing characteristics under controlled simulated conditions. Rehearse and replay actual or customized flight tests.
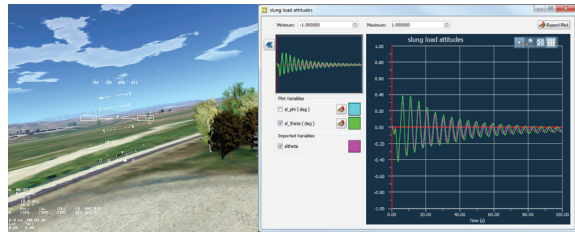
\ CHOICE OF ENGINES TO MATCH YOUR PERFORMANCE

Install and configure up to 8 main rotors using either the Turboshaft or Performance engine models. Model your own engine or start from the library of engines included with HeliSIM to begin building your engine model.

With the absence of detailed technical data, use the Performance Engine to create your custom engine using known performance data.
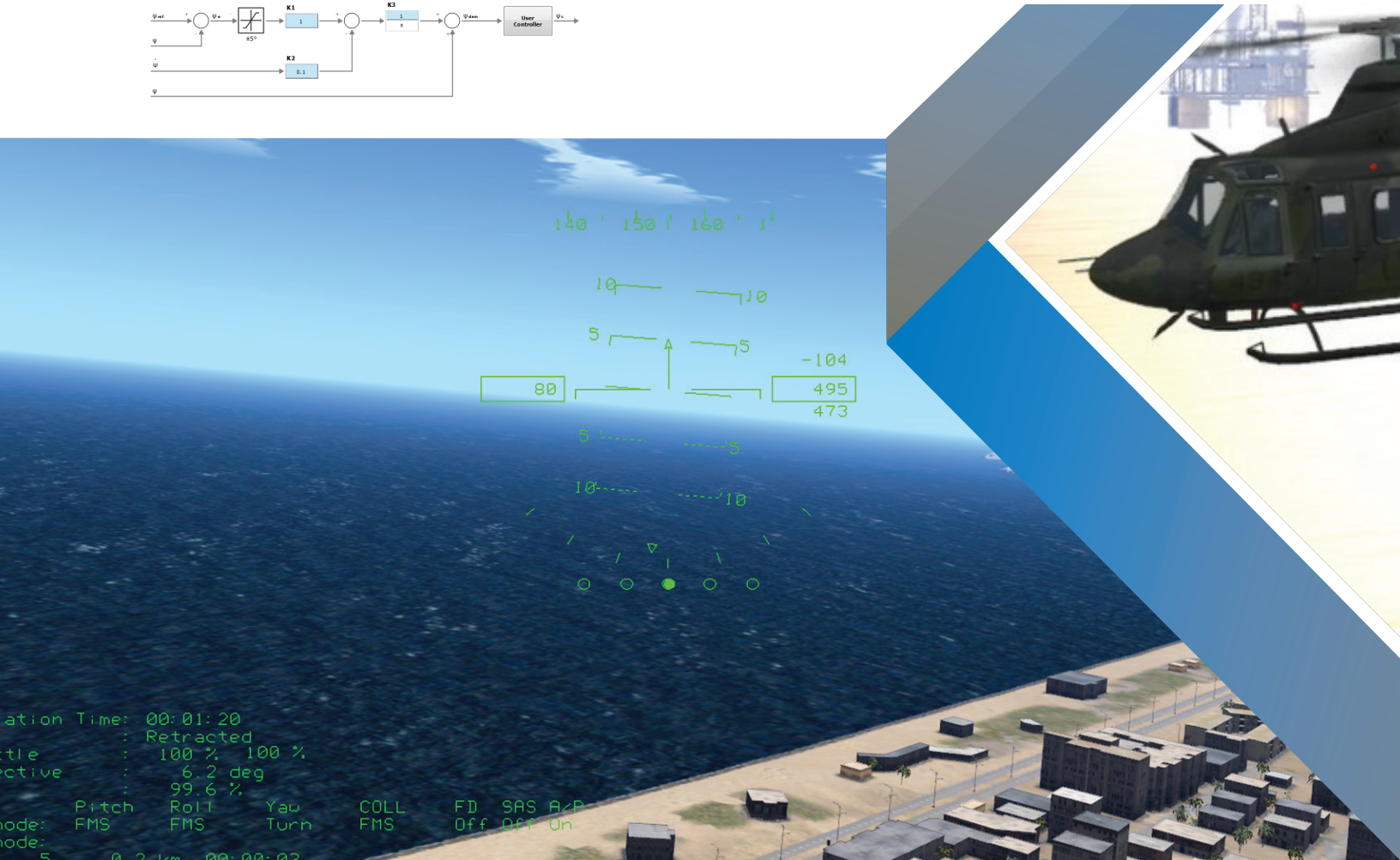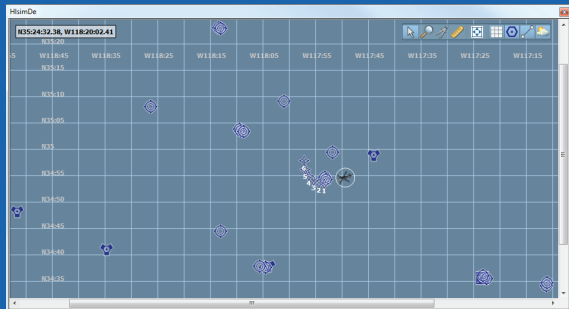
ADDITIONAL HELISIM FEATURES

\ **BUILD AND MAINTAIN YOUR NAVAID DATABASE**

Based on the ARINC424 Standard, create your own NAVAID database. Support for multiple receivers (DME, VOR, ADF, TACAN, ILS) to interact with the NAVAID stations.

\ **INTERACT WITH MOVING PLATFORMS**

Ability to define your landing area as a moving platform with finite dimensions.

\ **SIMULATE ROTORCRAFT SYSTEM MALFUNCTIONS**

Malfunction functionality is accessible out-of-the-box to simulate a variety of system malfunctions including electrical failures, hydraulic failures, engine out, and tail rotor failures.

\ **CONFIGURE ENVIRONMENTAL CONDITIONS**

Simulate atmospheric conditions such as altitude layer temperatures, pressures, lapse rates, as well as mean winds. Use the turbulence and windshear models to accurately simulate adverse weather phenomena.

\ **FULLY DOCUMENTED API**

HeliSIM allows users to take full control of the simulation in order to customize or replace the default simulation systems.

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