



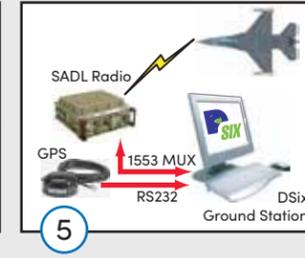
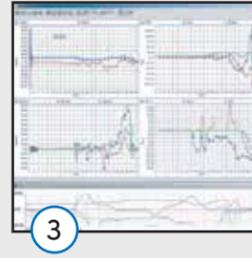
DSix

Flight Simulation Development
and Deployment Software

High-fidelity fixed-wing & rotary-wing flight model development software



DSix is a commercial software product for aerospace professionals that facilitates the development and deployment of aircraft flight models in simulation applications.



Common DSix Applications

1. Trainer Hardware Development

With the trainer's flight model hosted, use DSix as a test platform for displays, control loaders, or key hardware components in your trainer. A low-cost, real-time test bench that will reduce cost & schedule constraints on trainer hardware.

2. Trainer Math Model Development

Host simulator math models and execute real-time or non-real-time simulation sessions and evaluate model fidelity prior to simulator hardware integration. Load flight data for direct comparison with simulation results.

3. Flight Data Visualization & Analysis

Visualize flights by loading flight data and driving the DSix graphics model. Use plotting and manipulation tools to analyze flight events and prepare your simulation for validation efforts.

4. Flying Qualities Assessment

Develop and pre-prototype a simulation of a new aircraft configuration using wind tunnel data and/or computational data and then fly the model in real-time. Perform flight test maneuvers to assess the vehicle flying qualities & performance.

5. Hardware-in-the-Loop Simulation

Use DSix to host a flight model and interface with flight hardware like mission computers, flight control computers, or pilot input devices. With full-screen out-the-window graphics, a cost-efficient real-time lab is a reality.

6. Multi-Vehicle Simulation Scenarios

With several computers running the DSix simulation environment using its network interface module, users may host and run manned or unmanned multi-vehicle simulation scenarios to assess interoperability, collision avoidance algorithms, or multi-vehicle interaction aerodynamic effects.

One Product, Many Applications

As the aerospace industry has evolved from long-term development cycles to rapid prototyping and spiral development, the need to rapidly build, analyze, validate and deploy simulations to support all phases of vehicle operations has become paramount. Rather than building from legacy simulation paradigms, BAR has developed a reconfigurable simulation environment designed to support diverse simulation applications as requirements expand. With the flexibility afforded through object-oriented design, standard plug-in interfaces, computational resources, and supporting tools and interfaces, DSix provides the development environment for the most demanding flight simulation applications – including desktop development and analysis, full Operational Flight Trainer (OFT) flight model host, hardware-in-the-loop simulation, and high-performance networked multi-vehicle applications.

Collaborative Environment

To maximize the benefit of simulation in an organization or program, the use of the tool cannot be restricted to a single individual or department. DSix facilitates collaborative simulation use with its novel design. DSix treats simulation objects as a project -- effectively a container for all project-dependant components such as code, data and any other services needed for the specific simulation. The project also contains interfaces to common project-independent functions that include Equations of Motion, environment, table look-up, program graphic interfaces, etc. This highly flexible architecture allows the user to tailor simulation projects to their needs and transfer the project to other users for collaborative simulation development, analysis and application. The developer simply passes the project file to other users, with user-controlled access to the project code and data. The use of the standardized model-dependant software allows the recipients to immediately utilize the simulation in their application, while the reconfigurable hardware interface allows individual users to quickly configure their simulation to their specific hardware application for immediate productivity.

Supports All Aircraft Types and Data Sources

Whether modeling a fixed-wing aircraft, rotary-wing aircraft, V/STOL aircraft, or UAV, DSix provides the single simulation infrastructure for all aircraft types and configurations. With DSix, there are no rigid model structure requirements, thereby providing you with total control over your flight model definition. Whether the model structure consists of a simple linear model or a complex flight model with separate components for each system and sub-system (e.g., aero, primary flight controls, automatic flight controls, propulsion, weight and balance, gear, fuel, stores, hydraulics, etc.), DSix provides the simulation tools and graphic interfaces that enable efficient model development and deployment. DSix also enables the integration of legacy flight models, even in situations that may require mixed programming languages and formats. To assist with the import and export of tabular databases (a key but often problematic element of simulation development) DSix provides AeroPort -- a configurable simulation database porting tool that can import and export more than a dozen native table database formats quickly and accurately.

Complete Out-of-the-box, Yet Highly Customizable

Out-of-the-box, DSix provides a complete non-linear 6DOF simulation environment and a suite of simulation development, deployment and analysis tools. DSix includes the simulation interface, atmospheric model, I/O device interface, real-time strip charts, plotting tools, DirectX-based graphics (for out-the-window visual scene, HUD & virtual cockpit instrumentation), sound interface and script engine. DSix Developer also provides a Project Wizard that speeds simulation development and deployment and a Module Wizard for creating custom DSix modules. Additional elements include a sample flight model with source code, the InfoFile table lookup configuration tool and data editing tool, the Aeroport database conversion tool, and developer's reference documentation. While the software is delivered with templates and components, many elements of DSix are customizable, providing you with the ability to edit the sample flight model, reconfigure interfaces and plotting capabilities, and create your own virtual instruments. The DSix scripting engine enables powerful batch and real-time scripting using JScript, VBScript and others for a variety of tasks ranging from the output of reduced simulation data in Excel to the automation of simulation verification and validation test procedures.

Powerful Integration With 3rd Party Software & Hardware

In order to leverage 3rd party tools to extend the capabilities of DSix, a variety of included and add-on modules have been developed for DSix. For customers with specialized requirements, Bihrl engineers are available to readily develop custom add-on modules for a wide range of applications.

Mathworks The Mathworks interface in DSix provides Simulink users with a seamless way to integrate block diagram models developed in Simulink as real-time components in DSix. Using the Matlab and Simulink Coders from MathWorks, Bihrl Generic Target allows C code output to be directly imported and linked as a simulation element in DSix. Combined with other native DSix/MATLAB interaction, these tools allows fully interactive model and control system development with no coding required.

DiSTI For customers requiring 3D or sophisticated cockpit instruments, DSix provides direct integration with DiSTI's GLStudio instruments. With DSix, you can load, configure and run pre-built instrument RSOs that have been built using GLStudio.

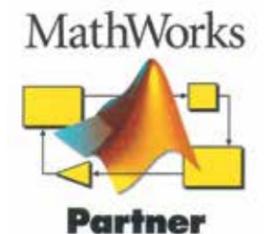
Lockheed Martin For customers requiring full-earth (WGS-84) or customizable terrain, the included Prepar3D module enables DSix to interface with Lockheed Martin's Prepar3D high-impact visual image generator for immersive, out-the-window visuals and geo-specific terrain.

SimulatorSolutions The SimStack add-on module provides an interface to the SimStack product line developed by Simulator Solutions. This module enables users to easily integrate OEM aircraft hardware into the simulation environment for the most realistic flight experience.

National Instruments The NIDAQ add-on module enables DSix to interface with the full catalog of National Instruments NIDAQmx I/O cards for access to a wide range of digital and analog applications, including DSix integration with flight simulator cockpit hardware.

Moog/FCS The Moog/FCS add-on module enables direct DSix interfacing with a full range of FCS hardware, including electric control loading, g-seats and motion systems via ethernet.

3rd Party Integrations



All product names are trade names or trademarks of their respective owners.

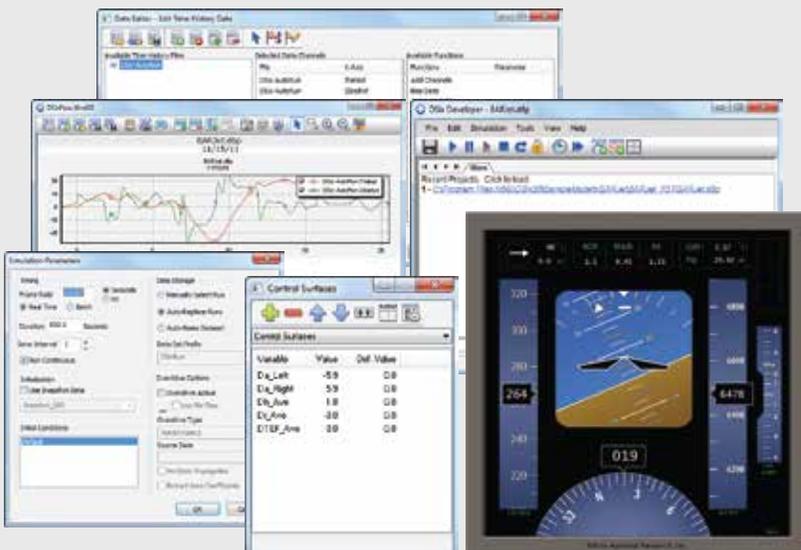
The right tool for your simulation application



DSix Flight Simulation Software

-  **Component-Based Project Structure**
 - Component-based flight model project structure breaks code into aircraft components (e.g., propulsion, flight controls, aero, etc.) and provides more flexible flight model development, collaboration, testing.
 - Project exports an interface that can be accessed from non-DSix simulation environment and external tools.
-  **Code Architecture**
 - Code base designed with a modular architecture
 - Provides enhanced flexibility and extensibility of DSix
-  **Runtime Edition**
 - Export models from DSix Developer Edition to the DSix Runtime Edition for simulation deployment.
-  **Graphical Module Manager**
 - Quickly view available modules and their purpose
 - Enable and disable individual modules with a mouse click
-  **Plot Engine**
 - Powers the DSix plot utility and data editor
 - Many features, more intuitive interface, less clutter
-  **Interactive Output Display**
 - Hyperlinks for recently used actions (e.g., opening a project)
 - Displays output from script, simulation models or any module
 - Multiple tabbed output windows
 - Significantly improved messaging allows greater status communication without interrupting simulation operations.
-  **Extensible Interface Manager**
 - All DSix components expose interfaces directly through the interface manager
 - Module and simulation model development greatly simplified by direct access to internal functionality
 - Interface functions and function parameters integrate with Visual Studio's IntelliSense
-  **DSix V1.x Project Support**
 - DSix 1.x project format loads and saves to new text-based format
 - Compiled DSix 1.x project code fully compatible

- New!**  **SimStack Add-On Module**
 - Provides DSix interface to SimStack hardware modules
 - Enables users to interface simulation to OEM aircraft hardware
 - Provides mapping of DSix variables to hardware
 - More info at simulatorsolutions.com.au
- Updated!**  **GLStudio Instruments Support**
 - DSix module enables loading of GLStudio instrument RSOs
 - Enhanced interface for easier integration
- Updated!**  **Image Generator Support**
 - Interface to Lockheed Martin Prepar3D for geo-specific terrain
 - Now supports Prepar3D Version 4
-  **Atmospheric Model**
 - Atmospheric effects model directly incorporated into DSix
 - MIL-SPEC Dryden Turbulence model
 - Modeling of wind shear, microbursts, gusts
 - Multi-level steady winds
-  **Support for Latest Microsoft Environments**
 - Visual Studio 2008 through 2017
 - Windows Windows 7, 8 and 10
-  **Scripting Support**
 - VBScript, JScript, and others
 - Direct access to DSix data
 - DSix components provide direct script access
 - DSix V1.95 scripts fully supported
-  **DSix Graphical User Interface (GUI)**
 - Support for 4K monitors
 - Improved menu structure
 - More consistent windows and dialogs
-  **Variable Display Windows**
 - Improved performance & configurable update rates
 - Drag and drop variable lists between windows
 - Copy and paste text file lists
-  **InfoFile**
 - DSix tool for managing table look-up data
 - Supports 2D and multi-dimensional tables
-  **Overdrive**
 - Overdrive manager allows overdriving select groups of simulation parameters
 - Optional aero coefficient extraction
-  **Sample Aircraft Model**
 - BARjet light jet sample model with gear
 - Features new component-based project structure
 - Source code provided
-  **Default Instrument Panel**
 - "Glass cockpit" display
 - Features airspeed and altitude ribbon gauges
-  **Updated Wizards**
 - Project wizard
 - Module wizard
-  **Portable Simulation Model Files**
 - All data saved in easy-to-read text format
 - All project data stored in one folder for project portability
 - Models easily configured for desktop and cockpit interfaces



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