



# Company Capabilities

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## Overview

Bihrlle Applied Research Inc (BAR) is a world-class aerospace technology company specializing in wind tunnel testing and simulation of aircraft. Since 1973, BAR has provided the military and civil aerospace industry with expertise in the area of flight dynamics modeling and analysis, compiling a resume of over 150 aircraft configurations. Leveraging a unique range of capabilities and resources, BAR has played a key role in all aspects of flight model development efforts, from the collection and analysis of source data, through the development of complex math models, to the validation and final acceptance of advanced trainers.

## Flight Simulation Services

BAR specializes in the development of software math models for military and civil fixed-wing and rotary-wing aircraft, including full-envelope modeling, aircraft upset recovery modeling, and failure/malfunction modeling. BAR successfully incorporates such flight models into a wide range of customer applications, including engineering workstations, full-mission military training simulators, civil Level-D Full Flight Simulators (FFS), hardware-in-the-loop simulators and multi-vehicle networked simulations. Using a variety of data sources, including wind-tunnel data and flight data, BAR develops cost-effective flight models from the ground up to meet the fidelity requirements of the simulator program. BAR also provides on-site engineering support services for flight model integration and simulator validation & acceptance, and provides the software tools for efficiently conducting verification, validation and re-certification tasks.

## Wind Tunnel Testing

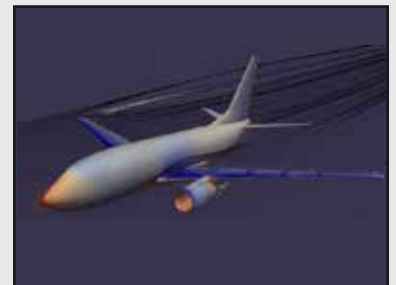
BAR's wind tunnel testing services enable the acquisition of static, dynamic, pressure and powered-effects data. Whether working with a sub-scale model or a full-scale flight article, BAR accommodates a wide range of configurations using company-owned and partner facilities. Leveraging BAR-developed test rigs and data acquisition software and hardware, BAR provides the ability to independently or simultaneously acquire static and dynamic test data using a single model and a single test facility. BAR's extensive testing experience, specialized software tools, and innovative solutions to complex testing problems combine to provide customers with the most effective test program and engineering support during the evolution of the vehicle configuration.

## Computational Fluid Dynamics

BAR extends its aerodynamics data collection and analysis capabilities with Computational Fluid Dynamics (CFD). The BAR CFD team has over two decades of experience in using CFD to predict aerodynamics analyses including stability and control, performance effects, and wake interactions. BAR offers comprehensive CFD analysis for steady and unsteady conditions. Beginning with detailed three-dimensional geometric information, BAR develops the surface models to be used to generate complex unstructured grids to resolve near and far-field solutions using one of several Full-Navier Stokes Solvers running on BAR's own High-Performance Computing (HPC) cluster.

## Software Solutions

BAR offers a variety of advanced PC-based software tools to support flight simulation development and deployment as well as UAS flight planning. These include: (1) DSix – flight model development and deployment software, (2) SimGen – aerodynamics prediction software, (3) CompARE – Quality Test Guide (QTG) software for flight model validation and certification, and (4) NavPath – advanced UAS flight planning software.



✉ [info@bihrlle.com](mailto:info@bihrlle.com)

☎ +1 757.766.2416

📍 81 Research Drive | Hampton VA | 23666

🌐 [www.bihrlle.com](http://www.bihrlle.com)

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