

Modeling and Simulation

The M&S Laboratory at NAVAIR Lakehurst uses powerful computer and visualization hardware and software to ensure customer confidence in proposed products before actual development begins. The design and functionality of the system can be reviewed before the product is solidified, which reduces the overall design and development costs; shortens scheduled product developments; and increases the likelihood that the product will operate as expected in its final intended environment.

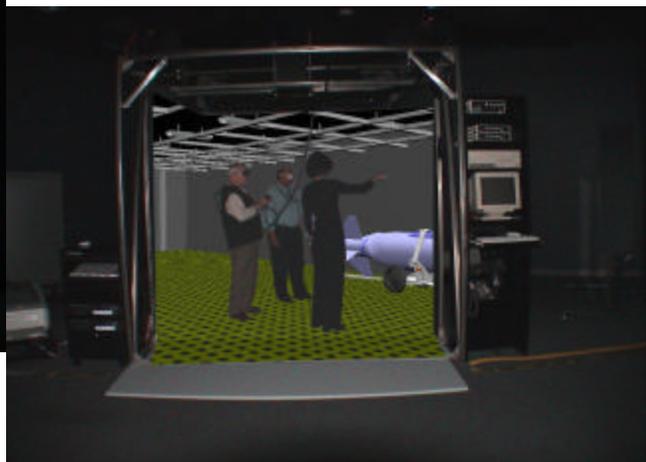
A novel approach to the use of state-of-the-art modeling and simulation (M&S) hardware and software facilitates concept analyses, requirement generation, and system design for advanced systems.

Two advanced visualization systems immerse users in a virtual environment that gives a three-dimensional understanding of how a proposed product will behave in its intended setting. The Visualization Center is a 6-foot-high by 19-foot-wide cylindrical screen that provides three-dimensional visualization and allows up to ten individuals to simultaneously view a scene and make decisions on how the proposed product should behave when installed. The CAVE from Fakespace is an 8-foot cube that allows up to five individuals to walk into a virtual environment. Individuals can view the environment from three sides as well as the floor and to virtually “walk-through” spaces while interacting with the environment. Both of these systems are powered by an Onyx 3200 from Silicon Graphics. The Onyx consists of eight CPUs, two graphic pipes, three raster managers, and 4 GB of RAM to drive the VisCenter and CAVE.

These resources in the M&S laboratory are also connected to the Defense Research and Engineering Network (DREN), a high-speed wide area network (WAN) that enables over 5,200 scientists and engineers at defense laboratories, test centers, universities, and industrial sites to share high-performance computing resources. DREN also allows engineers and analysts at NAVAIR Lakehurst to execute simulations across DoD and industry sites.



In the VisCenter up to 15 individuals can experience three-dimensional visualization.



The CAVE allows up to five individuals to be immersed in a virtual environment.

Partnering Opportunities

Several mechanisms exist for partnering with NAVAIR Lakehurst. These include cooperative research and development agreements (CRADAs), commercial services agreements (CSAs), and education partnership agreements (EPAs). Under a CRADA, Lakehurst engineers and scientists work cooperatively with their peers in industry or academia on mutually beneficial research and development. The Navy has been given statutory authorization, via CSAs, to use Navy facilities to perform specific types of work for private parties. EPAs allow collaboration between NAVAIR Lakehurst and educational institutions.

Potential Applications

The M&S tools in this API laboratory can be used to analyze and design systems for a wide range of DoD and commercial applications such as:

- Using automated systems to assist an Army soldier in battle
- Using a new robotic system to maneuver in an existing automobile assembly plant
- Designing a new tower at an airport to allow for maximum view of the runways and operator workstations
- Re-arranging a drug production line to increase productivity
- Arranging a hospital emergency room to maximize the number of patients that can be treated simultaneously

For More Information

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NAVAIR Lakehurst's Aircraft Platform Interface Facility was opened in August 2002. This 66,000-square-foot research and development facility supports the Navy's aircraft launch and recovery and support equipment missions. The technical capabilities covered by the 14 laboratories in this facility include power control systems; modeling, simulation, and data analysis/management; optical and lighting systems; integrated diagnostics; component evaluation; and applied technology. The synergism provided by collocating these teams of engineers, scientists, and technicians in one building further enhances this state-of-the-art facility.

NAVAIR Lakehurst researches, develops, tests, and procures aircraft launch and recovery systems and support equipment for Navy and Marine Corps aviation.