

## Advanced Launch and Recovery Control System

ALRCS environment is used by teams of engineers, scientists, subject matter experts, and customer representatives to define desired capabilities and generate

requirements and design documentation for future systems and for changes in current operations. It is also used to ensure that system features are advantageous to existing operations, while meeting the overall goal of reduced life-cycle cost as the system is developed. The virtual environment helps ensure that the final product will perform as required in its intended environment. The ALRCS Laboratory can also be used to train personnel both prior to and after the system is installed in its intended environment.

The Advanced Launch and Recovery Control System (ALRCS) Laboratory analyzes proposed product requirements and designs using human-in-the-loop in a virtual environment.

The ALRCS Laboratory at NAVAIR Lakehurst networks approximately 20 computers (PCs and work stations), 10 high-resolution flat-panel displays, and 10 computer monitors. Several commercial off-the-shelf (COTS) software tools reside on the hardware to allow for process, product, and information modeling.

Two ALRCS innovations that were developed at NAVAIR Lakehurst are being pursued for potential patent protection. The first is a software communication bridge that integrates the hardware and software. The second is a novel approach to integrate process models, product models, and information models so that analyses of proposed products, process re-engineering, or physical space layout may be performed simultaneously. The result is a virtual environment that is synchronized across all the displays and emulated workstations and allows for humans in the loop during simulation.



Two visualizations and one emulated workstation

## 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

Because the methodology and technology used in the ALRCS Laboratory have been defined and implemented using a generic, open system approach, the laboratory is equally suitable to DoD and industry applications. Almost any situation that needs to be analyzed may be broken down into process, information, product, and human interaction domains. The ALRCS Laboratory could be used to:

- Identify opportunities for technology insertion (including the use of intelligent agents, wireless sensors, and information systems)
- Understand data flows between humans and systems
- Analyze requirements for new products (including human factors)
- Demonstrate the effectiveness of proposed product designs
- Test the integration of new systems with existing (legacy) systems
- Provide training to individuals or groups on how to use new workstations or new processes

### 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.**