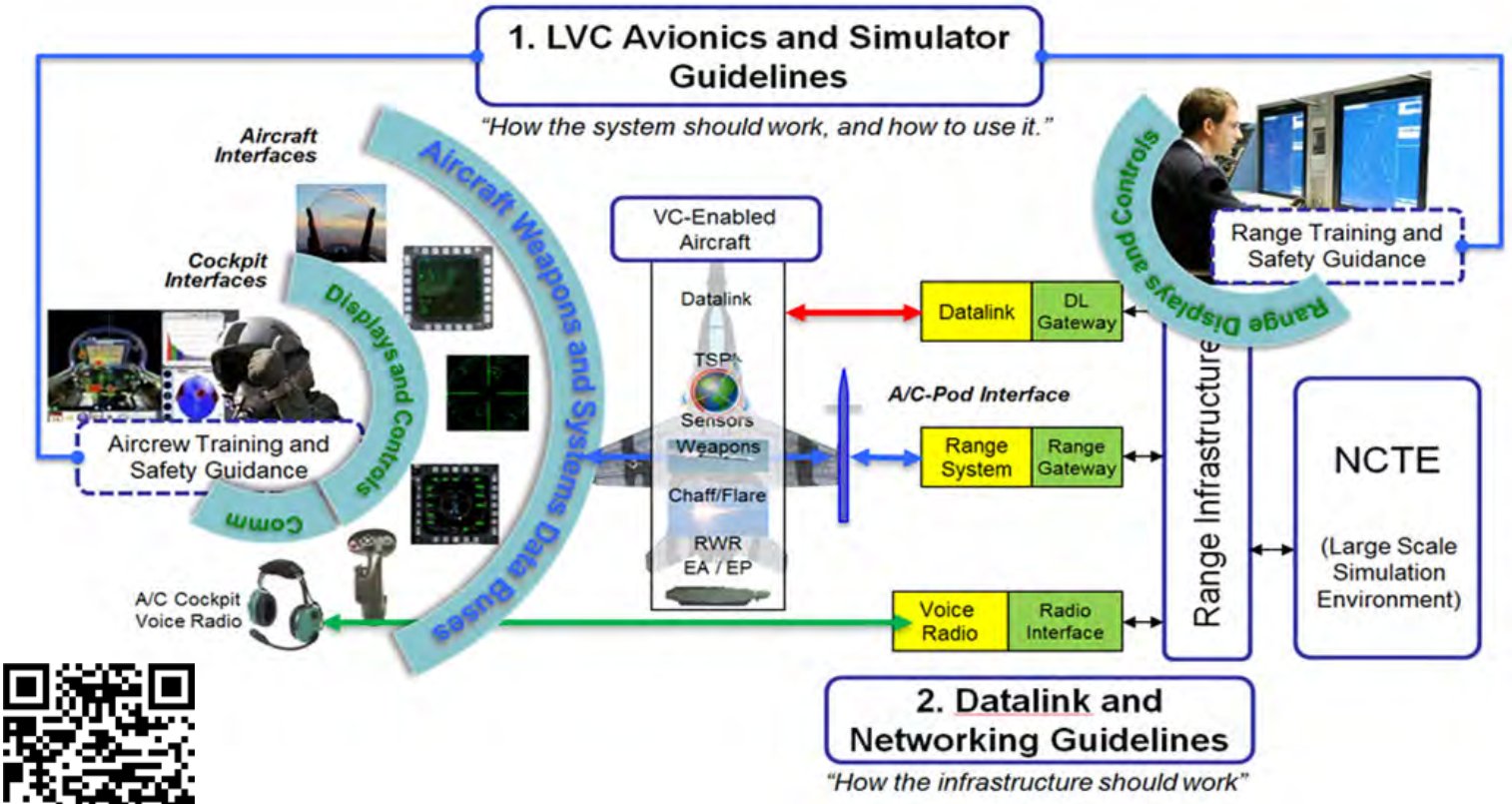
Virtual and Constructive Representations on Live Avionics Displays

EXHIBIT FACT SHEET

"The cost to operate our present and future platforms—combined with advanced capabilities that are rapidly exceeding the capabilities of our current training ranges—demands that within Naval Aviation we become much more innovative in combining live, virtual, and constructive training."
—VADM David Buss, Commander, Naval Air Forces

Training aircrews for modern Concept of Operations (CONOPS) increases the scale and complexity of mission training requirements. This training capability gap is being addressed through Virtual and Constructive Representations on Live Avionics Displays (VCR-LAD). Although some technical aspects of this type of integration have been examined, the impact on aircrew (in terms of safety and training effectiveness) has not been studied in detail. The VCR-LAD project builds the needed Science and Technology (S&T) foundation for LVC integration into live aircraft avionics. The research relates current training events to LVC augmented capabilities in order to investigate training impacts such as added workload, possible confusion about LVC entities, and data link induced safety-of-flight artifacts. The VCR-LAD program will produce safety recommendations for integrating LVC into platforms and training ranges, guidelines for the physical integration into avionics and aircraft simulators, and data link/networking guidelines for LVC-enabled training systems.



During FY15, the project will produce a scenario-based analysis of the overall communications requirements for LVC-enabled training ranges. We will also generate guidelines for using and controlling LVC-enabled assets, safely and effectively. As part of FY16 transition activities to F/A-18 and Training Range PMA, VCR-LAD will test advanced range communications with live aircraft.

What It Does

- VCR-LAD provides a set of guidelines and recommendations for safe, effective avionics and simulation integration, and a set of communications guidelines for maintaining consistency across the LVC environment
- VCR-LAD adds a critical element of LVC simulation to the training spectrum through a fully integrated representation of the LVC battlespace on live platforms
- VCR-LAD augments the information received from the aircraft avionics with synthetically generated information to present unified, consistent symbology

How It Works

- Initial considerations are based on Safety-of-Flight and Training and Readiness (T&R) criteria
- Through prototyping, experimentation, and hypothesis testing, the program creates traceable, substantiated design guidance
- VCR-LAD limits platform-specific modifications leveraging existing LVC standards and aircraft interfaces such as Navy Continuous Training Environment (NCTE)
- VCR-LAD knowledge products may influence future training range and cockpit upgrades

What It Will Achieve

- Quantifies safety and efficacy of augmented cockpit displays for T&R
- Allows for *Complex Tracks* that blend live aircraft and computer generated attributes to greatly improve the quality of the training produced with legacy adversary aircraft

For further information on this exhibit, or business opportunities with ONR, please contact the Training S&T Program Officer, Human & Bioengineered Division, Warfighter Performance Department, Office of Naval Research at 703-696-4501, or by mail at Office of Naval Research, 875 N. Randolph St., Arlington, VA 22203.