



Air Force Research Laboratory

Mesa Research Site



Visual Systems Research and Development for Distributed Mission Training

The development of high fidelity, out-the-window visual systems is one of the major technological challenges in the implementation of the Distributed Mission Training (DMT) concept. The field-of-view, brightness, and resolution of most currently available visual systems are much less than what a pilot sees in a real aircraft. The resolution of current out-the-window simulator displays is at least a factor of ten less than is required to identify other aircraft, ground vehicles, roads, and bridges at realistic tactical ranges, or to properly assess target orientations. Without the proper detail and realism in the visual display, many training tasks cannot be adequately performed.

The Warfighter Training Research Division is actively pursuing advances in visual system technologies through an integrated program of perceptual research and engineering development. In addition to out-the-window visuals, this program is addressing DMT requirements for briefing/debriefing visualization and eye-tracking technologies.

Visual/Perceptual Research

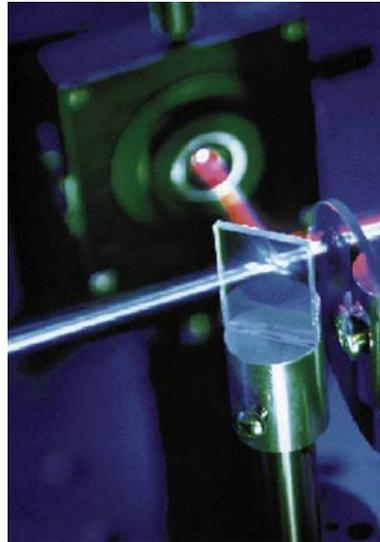
- Visual Display System Evaluation
- High-Resolution Projector Evaluation
- Display-Collimation Research
- Time-to-Contact Research
- Laboratory Velocity Research
- Network Latency Research
- HMDs and Stereovision Research

Advanced Display Technology Development

- Ultra High Resolution Projector Development
- Collimating Display Screens
- Next Generation Head Mounted Displays
- Advanced Image Generators
- 3-D Monitor Development



Wide-Angle Collimating / Real-Image Display Research Apparatus



Highly Efficient Red, Green, and Blue Microlaser Light Sources
Photo courtesy of Microvision, Inc.



Futuristic High Resolution Head Mounted Display Concept
Courtesy of Microvision, Inc.

POCs

Visual Perceptual Research:
Dr. Byron Pierce,
AFRL/HEAE, 480-988-6561 x219
byron.pierce@williams.af.mil

Technology Development:
Mr. Philip Peppler,
AFRL/HEAE, 480-988-6561 x273,
phil.peppler@williams.af.mil



Low-Cost, PC-Based Image Generators
Photo of Lite-Flite PC Image Generator
Courtesy of SDS International Inc., Quantum 3-D Inc., and Terrex Inc.

Air Force Research Laboratory
Warfighter Training Research Division
6030 S. Kent Street, Bldg. 561
Mesa, Arizona 85212-6061
(480) 988-6561
<https://www.williams.af.mil>