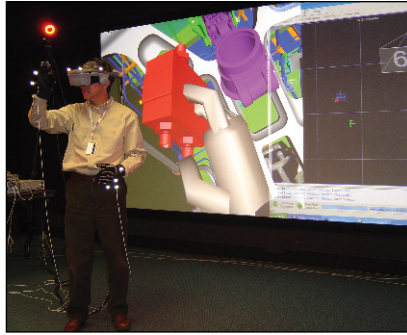


VIRTUAL REALITY CENTER

The **Virtual Reality Center (VRC)** at the National Institute for Aviation Research is a state-of-the-art virtual reality facility. It is the only facility of its kind in the state of Kansas, and was established in 2002.



The VRC is a 3D environment that can be used for numerous conception, engineering, manufacturing and marketing projects. The technology enables better collaboration and aids in design decisions. The laboratory is equipped with the latest virtual reality technology including an active stereoscopic 15'x7' rear-projection flat screen, seating for 25, a head-mounted display, high-tech motion tracking and motion capture systems and a special manipulation gloves. The VRC utilizes customized commercial software used in the aviation industry to address real-time visualization and simulation of data originated in Computer Aided Design, Engineering or Manufacturing (CAD/CAE/CAM).

FIELDS OF USAGE

The VRC services aviation and non-aviation industry necessities, in addition to WSU virtual reality research, related to the following simulation fields:

- **Virtual Prototyping:** in conception and design phases from any Computer Aided Design (CAD) or Computer Aided Industrial Design (CAID) data;
- **Digital Manufacturing:** used for Real Time Process Plan and Work Cell simulation from any CAD/CAM data;
- **Digital Engineering:** used in pre- and post-processing of massive Computer Aided Engineering (CAE) datasets for analysis and certification purposes;
- **Ergonomics:** in real-time anthropometrical analysis for assembly, accessibility and training evaluations;
- **Sales/Marketing:** in photo-realistic, real-time simulation of customized products.

FACILITIES

The Lab holds impressive, state-of-art VR equipment which focuses on full and semi-immersive simulation:

- Seats 25 viewers in a 1,842 sq.ft. visualization room
- Image generators: 1) HP xw9300 PC-based cluster using dual nVIDIA Quadro FX4500 + SLI + GSync cards per node and 2) SGI Onyx300 with 2 IR4 graphical pipes, 8 CPUs, 8 GB RAM
- Panoram's PanoWall 2K 15 x 7 ft. flat screen, active stereoscopic, rear projection with two Christie's Mirage 5000 DLP-based projectors reaching a combined resolution of 2368x1024 pixels
- Vista Systems Spyder 362 blend and mixer video processor; NVIS VisorSX head-mounted display with 1280x1024_60Hz and 60-degree diagonal field-of-view
- VICON 612 optical motion capture with 10 MCam2 high-speed (120Hz) cameras for high precision ergonomics analysis
- Ascension's Nest of Birds Extended Range magnetic motion tracking for head, hands and wand
- Gesture-sensitive glove: Fakespace Lab's PinchGlove
- 5.1 Channel Audio System with 4 speakers
- Creston's Control System w/ Wireless RF Touch panel and Extron's CrossPoint Plus 8x8HV and 8x4HVA Matrix Switchers
- Modeling, animation and editor software

SOFTWARE

- DS CATIA/ENOVIA V5
- DS 3DVia Virtools
- PTC Division Mockup Reality
- EON Reality Professional/I-Catcher
- Right Hemisphere Deep Exploration & Deep View
- CEI Ensign Gold
- Middleware: VRCO Trackd & VA RapidVRM
- OpenGL and OpenGL performer-based proprietary codes

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Located on the Wichita State University campus, in a city recognized as the Air Capital of the World, The National Institute for Aviation Research (NIAR) is a prestigious state-of-the-art aerospace research and development laboratory with global reach and expertise. NIAR integrates university, government and industry in cooperative efforts to advance technologies.

The Institute's clientele include many of the world's aerospace manufacturers, NASA and the FAA. It is the largest aviation R&D academic institution in the United States, with more than 120,000 square feet and 15 laboratories. NIAR is recognized internationally as a high-tech research and development, design, testing, certification and learning center.