

# ADVANCED VIRTUAL ENGINEERING & TESTING



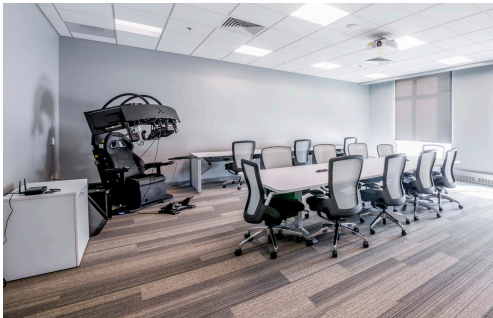
The Advanced Virtual Engineering and Testing Lab (AVET) is located at the Jerry Moran Center on Wichita State's Innovation Campus, a 22,000 square-foot facility NIAR's Virtual Engineering, Flight Simulation, Building Block and Crash Dynamics Labs. Some of AVET's feature highlights include an Instron Hydropuls CSAAdvanced sled, multiple client prep bays, workspace for 40+ virtual engineering staff, three collaboration rooms and secure areas for restricted projects. The updated space and equipment enable NIAR to expand work volume and provide more precise testing for clients, while increasing applied learning experiences for Wichita State students.

## AVET LABORATORIES



### VIRTUAL ENGINEERING

- 40 R&D Engineers: 20, FTE, 20 Research Assistants
- 41 PC High End Workstations
- Dedicated HPC Cluster for the Laboratory [1000 cores]
- Secured Areas for ITAR Restricted Projects
- Physics-Based Design Services for UAS, Aerospace Crashworthiness, Passenger Safety



### FLIGHT SIMULATION

- Provides user-centered, first-person perspective
- Allows user to walk through the operating system
- Allows use of simplified mathematical methods that can be performed real-time vs. more detailed models
- Requires an engineering mathematical model that includes the geometry, physics, and any quantitative or qualitative data from the real system
- Can be tailored to the desired accuracy of the solution
- Virtual Flight Testing w/ Pilot Console, Control Station and Collaboration Room



### CRASH DYNAMICS

- Hybrid Testing Capabilities/Test Planning
- Dynamic Sled Testing for Crashworthiness in Aerospace, Automotive, Military, Space, and Child Safety Applications
- Full-Scale Aerospace Airframe & EVTOL Crashworthiness
- High Speed Photogrammetry
- Test Article Scanning

### BUILDING BLOCK

#### COUPON LEVEL

- Quasi-Static Testing:
  - MTS Biaxial System Consisting of 4 Actuators and load cells rated at 22 kip (100kN) in Planar Arrangement
  - MTS HSR Load Frame
  - Load Frames up to 550 kip
- High Speed Testing:
  - MTS High Stroke Rate Servo-hydraulic frames
  - WSU Split Hopkinson Pressure Bar: Tension/Compression
  - Impact drop towers
- Instrumentation:
  - Laser Extensometers, Axial and Biaxial Extensometers, High-temperature uniaxial extensometers, Clip-on Displacement Gages, LVDT's, Thermography
  - Photogrammetry for Full-Field Measurements (ARAMIS and ESPI)
  - Photron SA-Z High Speed Cameras
- COMPONENT LEVEL
  - Fixture Design and Manufacturing
  - Hybrid Testing Capabilities: Pre-Test Analysis to plan and verify the test setup
  - Data reduction, oriented to the development and Verification and Validation of numerical models
  - Post-Test Analysis and Validation

## LOCATION

### JERRY MORAN CENTER

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## CONTACTS

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