# ENGINEERING EXCELLENCE TO SERVE THE WARFIGHTER



# I/ITSEC BOOTH 2300







### **DIGITAL TWINS**

ARA's Virtual Integration and Simulation Environment (VISE) is a framework for rapidly developing digital twin scenarios and tools in highly detailed and realistic environments. We use VISE to develop and test sophisticated robotic autonomy algorithms.

#### SYNTHETIC ENVIRONMENTS

ARA's synthetic environment technologies give military trainers and mission planners accurate 3D worlds in which to train, rehearse, and execute in minutes, a process that used to take several months. We use advanced modeling and simulation methodologies, computational resources, and underlying physical theory to tackle difficult problems of national importance.

#### VIRTUAL REALITY TRAINING

ARA's innovative VR tools, including VR-TAK in the TAK ecosystem, improve mission planning and rehearsal and increase situational awareness. Soldiers train and collaborate in full 3D environments driven by up-to-date terrain data and real-world physics.







UNREAL ENGINE

# **HIGH-FIDELITY LIVE TRAINING**

ARA provides the common software core for live-training exercises, simulating force-on-force engagement without proprietary software. Our software provides realistic weapons effects in real time, using verified and validated (V&V) damage methodologies and optimization strategies to calculate physics-based damage assessment.

# **OPEN-SOURCE PHYSIOLOGY ENGINE**

ARA's BioGears<sup>©</sup> open-source physiology engine is a whole-body simulation comprised of accurate system-level models. BioGears powers immersive training technologies and research by simulating realistic patient response to trauma and treatment.

#### AI/ML

ARA develops AI/ML applications for domains such as intelligence, medicine, CWMD support/automation, autonomous systems, national security, and infrastructure. Critical and complex decisions that rely heavily on human experts are often not amenable to off-the-shelf AI/ ML techniques. Our multi-disciplinary teams are developing innovative solutions that address these hard problems.

# PHOTOGRAMMETRY

We use advanced photogrammetry to create 3D models from drone-collected imagery and high-resolution satellite imagery, optimizing model geometry for use within simulators.

#### **UNREAL ENGINE DEVELOPMENT**

The Virtual Heroes Division of ARA has been innovating with the Unreal Engine for nearly twenty years. ARA has been named by Epic Games as an Unreal Engine Authorized Services Partner. Partners "provide the highest level of technical support, implementation, and co-dev services" to Unreal Engine customers.