



Emerging Technologies | Modeling & Simulation

For almost four decades, IEM remains at the forefront of supporting the nation's most significant public health, emergency management, and homeland and national security threats.

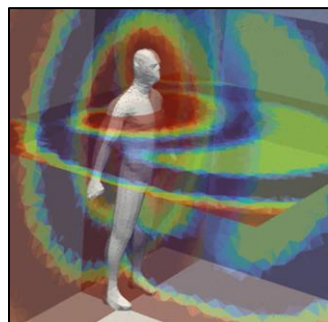
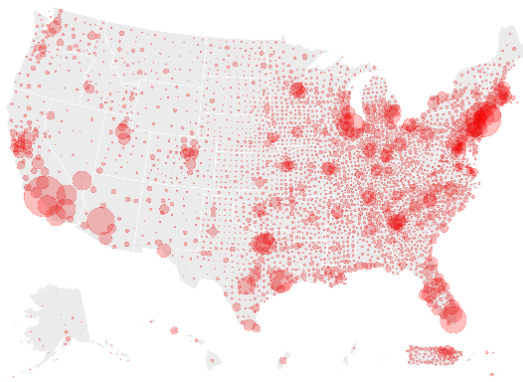
Our decision support systems are based on quantitative, probabilistic models that enable military and civilian leaders to assess threats, calculate risks, and mitigate potentially dangerous situations that may impact their forces, installations, and critical infrastructure. Our **science and technology-based tools** and **capabilities**, combined with a unique blend of operational, academic, and policy-level experience, enable us to deliver **cutting-edge solutions** that meet client needs in the public and private sectors.

Many clients call upon IEM to develop new models or evaluate and improve existing ones. We leverage **data science** and **data analytics**, **artificial intelligence (AI)**, **machine learning**, and **high-performance computing (HPC)**.

Leaders in Innovation

IEM Health creates state-of-the-art AI-based models to help determine the best courses of action for prevention and response. We developed, and provided *pro bono*, 7-day projections for new COVID-19 cases to over **400** individual counties, **all 50 states** and the **District of Columbia**, and **3 U.S. Territories**. These

projections were accomplished by running over 1.6 billion simulations that were completed in less than 20 minutes using parallel processing and graphics processing units (GPUs).



IEM's Defense Analytics & Modeling solutions help protect, support, and improve the performance of warfighters and military leaders at home and on the battlefield. We accelerated chemical plume dispersion modeling on GPUs, allowing us to complete 12 million simulations in under one minute.

Featured to the left: Computational Fluid Dynamics model of blast wave propagation.

CPU: 2,504 seconds (42 minutes)

*GPU: 149 seconds (2.5 minutes) **16.8 Times Faster***

QUICK FACTS

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Headquarters

Research Triangle Park, NC

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