

Ames Lab wins award for virtual spray paint training software

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A spray-paint technician in training uses VirtualPaint, a painting simulator designed to teach military personnel, commercial painters and other paint spray technicians the correct techniques for spray paint operations. Credit: IWRC and Ames Laboratory -- USDOE

Spray paint training and designing next-generation power plants don't seem, at first glance, to have much to do with one another. But, the U.S. Department of Energy's Ames Laboratory recently partnered with the Iowa Waste Reduction Center at the University of Northern Iowa to improve spray paint training using a virtual engineering software toolkit. The software enhancements have recently won a regional Federal Laboratory Consortium award for applying federal developed technology to industry needs.

The VirtualPaint software, developed by the Iowa Waste Reduction

Center, is a painting simulator designed to teach military personnel, commercial painters and other [paint](#) spray technicians the correct techniques for [spray paint](#) operations. Practicing paint skills in a virtual environment rather than a spray booth reduces hazardous air emissions, saves paint and reduces travel time for paint trainees.

IWRC staff sought to expand the capabilities of VirtualPaint and knew they needed a software solution that could handle the program's large data models and maintain realistic real-time virtual painting simulations. Ames Laboratory's VE-Suite, an open source virtual engineering [software toolkit](#), fit the job.

"VE-Suite is most often used to help engineers design and interact virtually with complex systems like agricultural devices and power plants," said Mark Bryden, director in Ames Laboratory's Simulation, Modeling and Decision Science program. "But VE-Suite is useful in any case where we encounter two problems: how to make decisions when faced with huge amounts of information from many different sources and how to create a virtual environment in real time to interact with this information."

VE-Suite is made up of tools that read, display and combine multiple steady and dynamic data sets, including graphics data and physics data in two or three dimensions.

In engineering, what results is a virtual decision-making environment that reduces the engineering design cycle and brings new technologies into production quicker and at less cost. In the case of VirtualPaint, VE-Suite helped improve the software's user interface to include multiple modes, automate installation and calibration, and introduce more realistic renderings of paint application in multiple colors.

"Expanding user customization capabilities, increasing spray model

accuracy and generating a more realistic simulation of [spray](#) application significantly increases the training value of the VirtualPaint system," said Jeremiah Treloar, VirtualPaint program manager at the Iowa Waste Reduction Center. "VE-Suite's development team at the Ames Laboratory deserves a lot of credit for the work they have done to successfully re-design the VirtualPaint [software](#). We are excited to evaluate how the finished product benefits VirtualPaint users."

The Federal Laboratory Consortium Midcontinent Region presented the Excellence in Technology Transfer award at its meeting in San Antonio on Sept. 6. The consortium is a nationwide Congressionally chartered network of federal laboratories aimed at promoting technology transfer.

Provided by Ames Laboratory

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