

What's Up MÄK

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Get Ahead of the Game with Beautiful Visual Scenes

MÄK's VR-Vantage brings you beautiful simulations in any domain — air, land, or sea



Fly airplanes, pilot boats, operate armored vehicles, observe the action from the ground or through UAV sensors — VR-Vantage IG immerses you in beautiful environments to bring your first-person players to life.

MÄK's reinvented IG combines high-performance visuals, advanced rendering techniques, and terrain databases to provide beautiful first-person simulations. We invite you to experience this power at I/ITSEC 2014; see how our player stations show the versatility of VR-Vantage IG using four different first-person physics models, many different terrain environments, and three different user interface controls.

Be a part of the following player stations:

- **Light Armored Vehicle (LAV)** - Watch MÄK's DI-Guy human characters autonomously react to simulated vehicles, where operators drive a LAV modeled using CM Labs' Vortex physics module. Enjoy realistic out-the-window visuals, rendered by VR-Vantage IG, and the SUROBI VTE terrain, provided by SimthetiQ with Speed Trees.
- **Forward Observer** - Play the role of an infantryman using binoculars to scope out enemy locations, strength, and activities; call for fire or close air support, recognize the need for aggressive action, and request weapon delivery. MÄK's DI-Guy provides the first-person simulation, physics, and intelligent/ambient human behavior, while VR-Forces simulates the scenario. The simulation shows off our Hawaii terrain database with streaming terrain provided by Pelican Mapping and MÄK.
- **GIST** - Experience the reality of managing a sensor system without taking your eyes off the target. It's tricky, especially when the host aircraft/UAV tosses about as it navigates through the sky. Take the controls of AeroSimulators USA's Gimbal Imaging Systems Trainer (GIST) and play the role of a tactical flight officer. AeroSimulators USA took control of VR-Vantage IG to build this high fidelity trainer.
- **Oculus Flight** - We've integrated VR-Vantage with the **Oculus Rift** head-mounted display, demonstrating its versatility with the newest display architectures, as well as superior rendering techniques. Strap the headset on and switch between an air domain image generator and an informative 3D visualization as you engage in air-to-air combat.

Whether your image generator is for simple desktop deployments or multichannel displays for virtual cockpits, or for the latest display technology like Oculus Rift, VR-Vantage helps you get ahead of the game. 🌸

Curious? Want to see more?

These **videos** show off some more beautiful visuals.

ECOSim takes MCTOG training to the next level

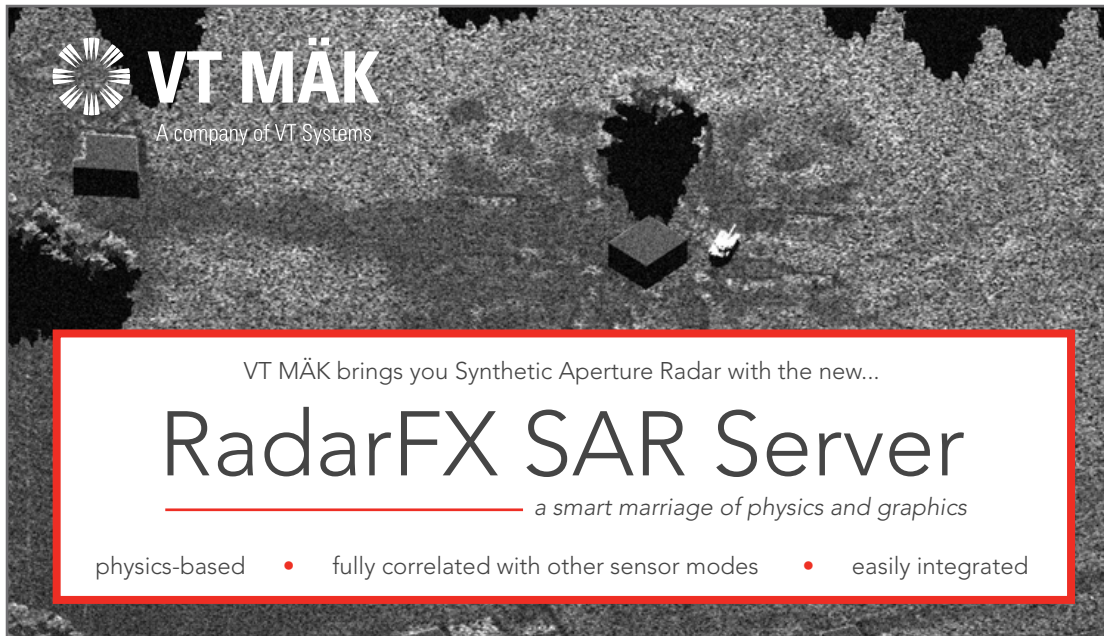
A word about our Phase IV ECOSim development plan by Alex Broadbent

The Marine Corps Tactics and Operations Group (MCTOG) provides advanced and standardized training in Marine Air-Ground Task Force (MAGTF) operations, combined arms training, and unit readiness planning at the battalion and regiment levels. MÄK's Enhanced Company Operations Simulation (ECOSim) is a vital component used by MCTOG for pre-deployment training and was recently awarded Phase IV funding for continued development and enhancement.

The centerpiece of the ECOSim system is the Small Unit Leader Interface (SULI) workstation, which visualizes the battlefield terrain, vehicles, civilians and combatants. Marine units are being trained with realistic training situations that are based on their upcoming combat. Each virtual marine within a battalion-sized element acts autonomously while navigating the terrain, following orders, joining formations, and responding intelligently to asynchronous events, like firefights. DI-Guy AI provides the critical "pattern of life" activity to simulate the real world challenges faced in combating insurgencies embedded within the general populace. The entire operation is viewed and broadcasted from a simple-to-use and versatile Unmanned Aircraft Systems (UAS) to platoon, battalion, and regiment levels.

Phase IV of ECOSim development includes integrating HLA federations with standard Marine Corps semi-autonomous forces (SAF) systems. This will enable ECOSim to interact with the entities in larger battlespace. GUI improvements allow the users to easily select and control squads, vehicles and other simulation assets, as well as to create and control crowds, we are updating and improving ECOSim's user interface. The camera controls will also become much more gamelike. To use the USMC hardware recently purchased for exercises, we will be creating a 64-bit version of ECOSim. On top of all that, Phase IV will incorporate many more new human, vehicle, and building models from active military area of operations.

These new features and advancements for ECOSim will be built on top of DI-Guy 13's performance improvements, featuring instancing and new character appearances. Want to learn more? See all you can get with [DI-Guy 13](#). 🌸



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Get Ahead of the Game with MÄK at I/ITSEC 2014

Join VT MÄK at I/ITSEC 2014 to learn the latest trends in Modeling & Simulation and how to incorporate wargaming, first-person simulation, and web technology into your training environments. Get ahead of the game! Visit us at booth #1225.

Tips & Techniques

Make your terrain shine brighter: A VR-Vantage 2.0 tip from Poojan Promin

If your nighttime virtual environment suffers from chronic darkness, the problem is likely a combination of the graphics software and the terrain database. The good news is that modern graphics cards can cast light from several light sources at a time. The challenge is that the world you're modeling likely has way more than several lights. Real places have more lights than any graphics engine can practically render. The trick is to balance the database design with the capabilities of the image generator.

VR-Vantage 2.0 has the ability to overcome the limitations of the graphics card to enable terrain databases to contain hundreds – maybe thousands – of lights, each casting light into the scene. For the graphics programmer in you, this technique is called Forward+ lighting. Instead of picking the eight lights that the graphics card can render in one pass and drawing a scene with only those eight lights, it divides your screen into tiles and renders 8 lights per tile. The more lights you have, the more tiles the screen will be divided into.

So what does this mean for you? It means that you can spiff up your database pretty quickly by adding a light source to any 3D model that is scattered across your database. That one light source will now appear everywhere that model is referenced in the terrain. If your database has light poles, you're in luck. Add a light to that pole model and boom - every model of that light pole in your scene is now lit up. If you aren't so lucky, then try adding a light to the corner of a commonly used building model. The trick is to pick a few 3D models that are distributed well across the terrain to achieve the brightness you're looking for in your night time virtual environment. 🌸



MÄKer Spotlight: Poojan Promin

Senior Software Engineer



This month the spotlight shines on Poojan Promin - one of MÄK's Senior Software Engineers on our VR-Vantage team. As a senior engineer, Poojan improves the visualization capabilities of VR-Vantage by identifying, designing, and implementing state-of-the-art rendering techniques. He works on improving the performance of VR-Vantage, both in terms of rendering techniques and simulation algorithms that the product uses. He also helps with customer support and bug fixes.

Before MÄK, Poojan owned his own company, PSquare Interactive, from 2006 to 2013. Serving clients in Europe and America, Poojan developed custom 3D graphics products in the areas of video games, medical simulations, and industrial applications. Previously, Poojan was a researcher at the Fraunhofer Institute for Computer Graphics in Germany, while also pursuing his PhD there. He was involved in various projects that were funded by companies like EU, the German Research Foundation, BMW, and Daimler-Chrysler.

Poojan holds a Masters of Science in Computer Science which he received from State University of New York at Stony Brook in 2002. Some of Poojan's hobbies include watching movies and traveling. He also enjoys video games.

We hope this piques your interest in our community here at VT MÄK. Stay tuned to the [MÄK blog](#) and [Twitter](#) for more updates from us! 🌸