What's Up MÄK

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More Than Just a Gateway:

How MÄK Helped the Air Force Modernize its Air Warfare Simulation System

Imagine that you are responsible for modernizing a large and complex simulation system; you must bring its training capabilities up-to-date and leverage new technological innovations. Do you think it's possible to manage this transformation while maintaining interoperability with existing systems? It's entirely possible – and it's been done with MÄK.

When the US Air Force needed to modernize their Air Warfare Simulation (AWSIM) system, they needed to improve interoperability among their own applications and maintain interoperability with the broader joint forces' war gaming systems. They chose HLA Evolved as the interoperability architecture in part because of its more flexible approach to managing federation object model (FOM) extensions. HLA Evolved enables federation designers to agree on the common core of a FOM for broad interoperability, and use FOM modules to address specific communication needs within the Air Force systems.

Choosing HLA Evolved is not, however, enough to ensure interoperability with all the other joint forces simulation systems. Each large scale system has its own object model, each may be running different versions of the HLA protocol (or even the DIS protocol), and each HLA system is run on a particular run-time infrastructure (RTI). The Air Force needed a many-to-many gateway solution that was compatible with HLA Evolved and customizable to support the protocols dictated by other large-scale systems. After considering various options, the Air Force chose MÄK's commercial off the shelf (COTS) VR-Exchange interoperability portal.

Their faith was well placed. What they got was more than just a gateway – because VR-Exchange is easily extensible through an API, the Air Force's system integrator was empowered to build brokers to connect their AWSIM system with the Army's JLCCTC system and the Navy's JSAF system. Their success extending VR-Exchange to build their own series of custom brokers has given them confidence that COTS is the right way to go. The integrator has since purchased an enterprise license from MÄK, enabling them to deploy VR-Exchange licenses wherever they are needed.

Learn more about how the Air Force uses MÄK products

INSIDE THIS ISSUE

Tips & Techniques

Build Bigger AI in Training Simulations with ECO Sim

During live missions, soldiers and marines interact with the rich complexity of human behavior. Fellow blue forces and command structures behave, or at least are supposed to behave, according to doctrine. Civilians are busy going about their business, which can be as simple as hanging around, or as complex as searching for and gathering with friends, avoiding traffic, playing games, shopping, or engaging in religious or civic causes. Opposing forces may also be following doctrine or, all too often these days, be very unorthodox in their behavior. It's hard to tell the normal, peaceful activities from the malicious ones.

Here's a suggestion on how to model such a complex environment – use artificial intelligence (AI) for the simulated entities, then group them together and add AI to the groups. There, we made it sound easy. But seriously, the U.S. Marine Corps Tactical Operations Group (MCTOG) had exactly this issue. They needed to train captains to learn their role as commanders through realistic search, patrol, and intelligence gathering exercises. And to do that they needed a way to model a complex network of human behavior. Working together with our DI-Guy team, we developed a new level of interactive scenario generation capability. We call it Enhanced Company Operation Simulation, ECO Sim for short.

ECO Sim builds upon DI-Guy AI, which provides "Lua-brains" to individual characters, by applying Lua intelligence to collections of characters to form sophisticated human networks. Opposing forces intent on deploying improvised explosive devices (IED) are modeled with financiers, bomb makers, safe houses, leaders, and emplacers. These IED networks operate within a larger backdrop of ambient civilian behavioral patterns of life: farmers in fields, children attending school, families going to marketplaces, and religious services.

With all this intelligence built into high level objects, it becomes quite easy to set up training scenarios. So easy, in fact, that the Marines create scenarios at the same time that company commanders are being trained. ECO Sim is designed so a Marine can create a complex scenario in under 10 minutes. This power and flexibility gives the instructors the ability to dynamically alter the behavior to stimulate conditions that meet the Marines' training needs.

AI layered on more AI, its a beautiful thing.

Extensibility with DIS 7:

DIS 7 brought a large number of improvements to the standard. Read Felix's latest blog to learn how its new extensibility can help you. Also download his DIS 7 Technical Tutorial for all the details about DIS 7.

MÄKer Spotlight: Jeff Bail

Senior Software Engineer

This month, the spotlight shines on one of our Senior Software Engineers, Jeff Bail! Jeff is an integral supporter of our international sales team and spends a lot of time assisting our Asian, Australian, and South American resellers. Jeff's favorite events are the regional reseller conferences, where he gets to visit and train our resellers on the ins and outs of our products. He's known many of the resellers for over ten years and notes that they are all excellent hosts in their home countries!

Virtual reality (VR) is one of Jeff's passions. Recently, he's been integrating the Oculus, a next-generation virtual reality headset designed for immersive gaming, with MÄK products. Jeff is very connected to this project, as this is the first type of technology in a long time that has affected how he feels, both physically and emotionally. Jeff believes that virtual reality and augmented reality (projecting virtual objects into the real world you perceive) will change the way we interact with computers, people, and the world around us.

A seasoned traveler, Jeff has been all over the world. One memory that sticks out is when he rented a motorcycle and rode the Great Ocean Road past the twelve apostles in Victoria, Australia. With so many new places to explore, his favorite place is the one he hasn't been to yet!

The motorcycle trip in Australia may have tipped you off, but you should know that Jeff has a serious love of the long and winding road. For the past 11 years, his favorite way to relax has been to take his Kawasaki Vulcan out for a spin. Jeff also has a dog named Midnight, who enjoys butt scratches, doggie snow angels, playing chase, tennis balls, digging, and long walks. Although he has his own dog bed in Jeff's home office, Midnight makes for a lousy canine secretary.