

What's Up MÄK

VT MÄK Builds DDS-Based After Action Review Server for Meggitt Training Systems' Next Generation Live Fire Target Systems

Development of Meggitt's After Action Review Server Simplified through DDS



MEGGITT
Training Systems

MÄK is excited to announce that Meggitt Training Systems has selected MÄK to develop a Data Distribution Service (DDS) based After Action Review (AAR) Server for Meggitt's next generation live fire (NGLF) target systems. Using DDS as the networking protocol, MÄK is developing record and replay capabilities for the system.

Live fire training systems are used to execute realistic scenarios with live ammunition in a simulated environment. The AAR server is an important subsystem that provides feedback on trainee performance. The AAR system will record all the range events communicated via DDS, store them in a SQL database for playback, and assist in analyzing the data to provide training results. Server functionality will enable recording of the DDS data stream, as well as DDS playback/annotation abilities.

DDS is networking middleware is commonly used in embedded systems. It implements a publish/subscribe model for sending and receiving data, events, and commands among the nodes that produce information in the simulation. These nodes, also known as publishers, create 'topics' (e.g., temperature, location, pressure) and publish 'samples'. DDS takes care of delivering the sample to all subscribers that declare an interest in that topic.

"We are pleased that MÄK has partnered with us to support the innovative capabilities that our next generation live fire target system delivers to the industry. This partnership underpins our mutual commitment to range modernization and the development of future technologies to sustain superior training solutions."

- Ronald VADAS, President, Meggitt Training Systems

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Using B-HAVE's Lua Scripting to Supplement VR-Forces Plans

The B-HAVE Module for VR-Forces includes a Lua scripting capability. This feature is not restricted to B-HAVE-ish activities. It provides access to VR-Forces tasks, sets, and entity information. You can use this feature to supplement VR-Forces plans. For example, entity plans and global plans let you create entities at any time, but there is no way to create and save a plan for an entity that does not exist, so you cannot create plans for these entities ahead of time. Once you create such an entity, you can give it tasks from a global or entity plan, but it is very difficult to script a sequence of tasks because successive tasks overwrite each other and there is no simple way for a plan to determine when an entity has finished the current task. You can overcome this problem by using a Lua script.

The brief script to the right tests to see if the entity it is assigned to (this) has a task. If it does not, and the counter is 0, it sends the entity to Point 1. If the counter is 1, it sends it to Point 2. But if the entity has a task (in this case if it is currently moving to Point 1 or Point 2 – or even a task assigned from the GUI), the script does nothing and the entity gets to continue with its task.

```
counter = 0
function onTick ()
  if this:isCurrentlyTasked () == false then
    if counter == 0 then
      this:taskBHAVEMoveToWaypoint("Point 1")
      counter = 1
    elseif counter == 1 then
      this:taskBHAVEMoveToWaypoint("Point 2")
      counter = 0
    end
  end
end
```

To use this script:

1. Create a new B-HAVE Lua script as shown above and call it TechTip.
2. Create a scenario with two waypoints. Accept the default names.
3. Create a global plan that does the following:
 - a. Creates a ground entity such as a HMMVV or civilian car and calls it Entity 1.
 - b. Adds a Set -> B-HAVE Script set data request that assigns TechTip to Entity 1.
4. Run the scenario. Entity 1 will drive back and forth between Point 1 and Point 2.

Webinars

Simulated Video – Image Generation for Unmanned Vehicle Systems

January 26, 2012; 9 am EDT & 4 pm EDT

As unmanned vehicle systems continue to proliferate, interoperability standards are starting to emerge for the dissemination of remote sensor video and the related metadata. This webinar will look at the MISB standards and the architectural changes required to shift from Image Generation for manned training devices to Simulated Video for training and developing UVS control stations.

Join us as Jim Kogler, MÄK's Director of COTS products, discusses image generation for UVS.

Space is limited so register now to reserve your seat.

Can't make it to the webinar? Registrants receive access to the recording after the event, so register now!

Want to join us? To register for the 9:00 am webinar, click [here](#).
For the 4:00 pm webinar, click [here](#).

VT MÄK Announces VR-theWorld Server 2.0

New Version Adds Fidelity and Realism to Streaming Terrain Databases

VT MÄK is pleased to announce the release of VR-TheWorld Server 2.0, featuring the addition of streaming features. Streaming features add a level of depth to VR-TheWorld, providing a more detailed terrain for a wider variety of customer uses.

VR-TheWorld Server is a terrain server that streams terrain data to simulation and visualization applications on the user's network. By dynamically creating 3D environments from the streamed terrain data, applications can be up and running in the early stages of terrain database development, decreasing the development time of simulation projects. And by streaming only the data needed by the simulation scenario, iterations on the database design and scenario development can occur simultaneously, optimizing new data acquisition requirements. Delivered with 2TB of whole Earth data, VR-TheWorld's web-based interface enables project specific terrain data uploads from any computer with a web browser and access to the server.

VR-TheWorld Server can be deployed on private classified networks

to provide streaming data to applications behind a firewall. It can also be hosted in the cloud to provide terrain data to client applications with Internet access. By centralizing and simplifying terrain data management, applications become easier to deploy to a larger numbers of clients.

VR-TheWorld represents the leading edge of MÄK's Terrain Agile support for open standards based terrain interoperability. This version adds the ability to stream features using the Open Geospatial Consortium's Web Feature Service (WFS). Previous versions streamed elevation and imagery using the Web Mapping Service (WMS) and the Open Source Geospatial Foundation's (OSGeo) Tile Map Service (TMS) standards. By adopting commercially accepted standards, modeling and simulation applications can interoperate and correlate with an increasing number of thin client mapping, terrain analysis, mission planning and command and control applications.

Use Case

Live/Virtual Training using DDS

Connecting live and virtual systems for on-demand training requires an in-depth knowledge of how each system communicates so a common language can be developed to bridge the systems. A comprehensive understanding of object model complexity must be combined with a deep understanding of protocols such as the Data Distribution Services (DDS) often found in Live systems and HLA, or DIS, used in Virtual systems.

VT MÄK has extensive expertise designing and constructing object models. Our interoperability expertise can be a significant enabler for your DDS project.

Use Case: Your task is to develop a system that bridges together live information from a naval combat system using DDS and allows the system to sense and destroy simulated targets using HLA. Precise entity and sensor positions need to be understood and translated into appropriate DDS Topics for realistic targeting. All system interactions need to be logged in an SQL database for further analysis for dynamic replay and after action reporting. You must build a system that implements this Live/Virtual connection while allowing you to soar through

all the data and find meaningful events that create scoring and critical feedback to the trainees.

MÄK can help you develop your Live/Virtual Training System by enabling you to:

- Interface with your live DDS data stream to create a real time, high performance virtual bridge
- Implement a comprehensive bridge object model that accurately conveys the needed data between systems
- Implement schema and logical/physical database design to support efficient real-time recording and playback of DDS data stream
- Capture the significant events in your training exercise to support efficient data access and report generation

MÄK's Interoperability products, VR-Exchange, VR-Link, and the MÄK RTI provide a solid technological foundation and MÄK's FOM Developments and LVC Interoperability services offer the expertise to make your project a success.

Customer Success!

Ben-Gurion University Human Factors Engineering Center chooses VT MÄK Products to Create a Virtual World for Hazard Perception Research

The Ben-Gurion University (BGU) Human Factor Engineering Center is a research group at Ben Gurion University, located in Israel. The Human Factors Engineering Laboratory beholds a Virtual Environment Simulation Laboratory (Dome Projection Facility) and has chosen MÄK products to enable and further its research in the area of hazard perception (HP) among child pedestrians.

The Human Factors Engineering lab has recently completed its pioneer study to examine children's ability to perceive hazards while crossing roadways. This initiative is an important first step in the attempt to find an intervention technique that may reduce child-pedestrians' over-involvement in traffic crashes.

Development of a training program requires a comprehensive understanding of child-pedestrians' traffic behavior patterns. Comparing adults and children provides a depiction of what elements in the traffic environment are crucial for the road-crossing task. In the pioneer study, children and adults participated in a two-phase experiment. They observed typical urban scenarios from a pedestrian's point of view and were required to: (1) Press a response button each time they felt it was safe to cross; and (2) Describe the features that they perceived as relevant for a safe road-crossing decision. Participants' eye-movements were recorded throughout the experiment utilizing a helmet mounted tracker.

To successfully create a safe zone for experimentation, streets, cars, trees, and various other urban elements were designed uniquely for this VR environment in a large dome. Using MÄK's Commercial off the Shelf (COTS) products, including VR-Vantage, VR-Forces and B-HAVE, the lab was able to develop different scenarios to examine crossing behavior at various conditions. VR-Forces, MÄK's Computer Generated Forces toolkit, generated the scenarios while VR-Vantage, MÄK's visual rendering tool, was used to operate the out of the window view presented in the dome.



"VR-Forces, B-HAVE, and VR-Vantage made the perfect formula in creating our virtual world. No integration work was needed, just configuration," said Dr. Tal Oron-Gilad, Ph. D, the Human Factors engineer and researcher leading the project.

This sale was facilitated by Synergy Integration Ltd., MÄK's reseller in Israel. Synergy is the leading company in Israel that actively promotes innovative concepts and technologies, including the use of commercial-off-the-shelf components. In addition to distributing and supporting COTS products, Synergy also promotes the usage of worldwide standards and integrates high-level tools for simulation, engineering analysis, and training applications.

"With MÄK's support we were successfully able to implement a COTS based solution in an academic environment. BGU's acceptance and excitement made the endeavor a great success," said Jacob Silbiger, Managing director, Synergy Integration Ltd.

The significance of this project stems from its engagement in a novel training methodology involving virtual reality capabilities. By addressing child-pedestrians' road safety behavior in off-road settings, the Human Factors Engineering is promoting the utilization of HP scenarios as a tool to train child-pedestrians to detect and predict hazardous situations.

"Only a COTS solution like the one offered by MÄK could meet the budget constraints of our project. It was the perfect all-in-one solution at the right price," said Oron-Gilad.



If you would like MÄK to publish your success story, contact marketing@mak.com.

MÄKer Spotlight: Anthony Merrill

Software Engineer



Since 2009, Anthony Merrill has been enjoying life at MÄK as a software engineer in our Link Group. His main focus is VR-Link and the MÄK RTI, but he is also responsible for maintaining licensing support in addition to several “on the side” projects (like the new License Manager and VR-Link on an Android Platform).

A graduate of Full Sail University in Winter Park, Florida for Game Design and Development in 2006, Anthony received his B.S. and then moved to California to work with a video game development company. While there, he worked on various titles such as “The Golden Compass” and “G.I.J.O.E: Rise of the Cobra”, as well as several internal tools. In 2008, he moved to Connecticut where he developed mobile video games including “NBA Street” and “NBA Live 2010”.

In addition to being a programming whiz, Anthony is also a former 2nd degree black belt in New Hampshire and placed 3rd in nationals for sparring for the Amateur Athletic Union (AAU). He’s a Star Wars Aficionado and enjoys spending much of his free time with his kids, Tobias and Aurora, teaching them the ways of the Jedi. And if you were curious about any other talents Anthony has, let it be known that he is forever acquiring new skills: Quantum Physics, Advanced Calculus, Metallurgy, Electronic Engineering, Combustion, and Aerospace, to name a few.

We hope we’ve piqued your interest in getting to know our MÄK team. Stay tuned to our [website](#) to learn more about what’s going on at MÄK!

Product Updates

B-Have 2.0.2 - Linux Port, significant Traffic Improvements

VR-Vantage 1.4 - VC10, HLA Evolved, OSG Upgrade, OSG Earth improvements

For more information, please contact info@mak.com.

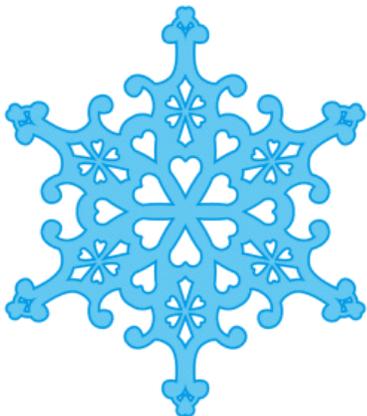
Link. Simulate. Visualize. Employ.

You know our COTS tools and solutions.

Now come be part of
the MÄK team.

MÄK offers a creative work environment, great benefits, and interesting work. If you’re an innovative modeling and simulation professional who relishes a challenge, we want to hear from you. To learn more about our available positions, please visit our [Careers page!](#)

We are now hiring in Cambridge, MA and Orlando, FL.



Happy Holidays! Wishing
you happiness this season and
throughout the new year.