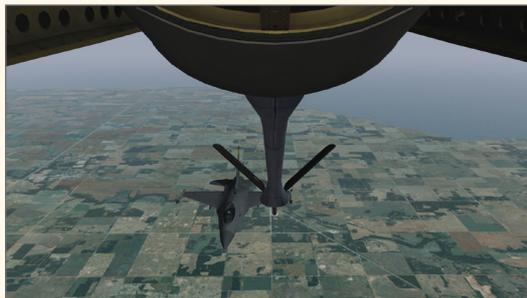


# Customer Success!

## QuantaDyn Corporation Chooses MÄK's VR-Link for DIS Protocol in Aerial Refueling Simulator

It is no small task for two aircraft to successfully connect mid-flight and transfer fuel. Simulating this maneuver in a networked environment is complex, dependent on frequent updates for several variables including position, velocity, and acceleration of the simulated aircraft. QuantaDyn Corporation, an engineering firm specializing in training simulations, has developed a technical solution for networked aerial refueling training, using MÄK's VR-Link for all DIS standard protocol.



These are screenshots from a QuantaDyn trainer, performing an Aerial Refueling Mission. The top graphic is from the receiver looking up at the tanker and the bottom one is from the tanker side looking down on the receiver.

The communication of calculated data to and from the DIS network complicates aerial refueling (AR) training. Position updates typically involve "dead reckoning," where the trainer guesses the location of the remote aircraft each frame until it receives the actual position update from the remote trainer. This approach avoids flooding the network with position updates every frame, but poses a dilemma for close proximity training. For example, at 275 knots an aircraft will move almost 8ft in 1/60th of a second, the typical frame rate. Standard dead reckoning only sends position updates when an aircraft goes outside of a certain threshold and can result in a jump of a foot or two when a new position update is received. When refueling mid-flight, those few feet can make a huge difference. Avoiding this dead reckoning gap is the main issue facing aerial refueling training.

MÄK's VR-Link allows QuantaDyn to modify the way they use standard DIS packets without having to update the DIS interface. They

are able to send relative position, velocity, and acceleration updates instead of standard position, velocity, and acceleration updates by altering the information given to the VR-Link software and selecting an alternative dead reckoning algorithm. VR-Link provides the necessary "gateway" to send and receive data to and from the DIS network.

"MÄK was chosen because it is an industry leader in HLA and DIS simulation networking and has many years of experience providing solutions and services in this area. With VR-Link, we were able to focus our full development effort towards a technical solution for Networked Aerial Refueling Training," explained Michael Parker, Project Engineer for QuantaDyn. "MÄK took care of packaging and formatting the data to send across the network and receiving and unpacking the data from the network. We could then use this data and focus our efforts in our area of expertise and develop a solid solution for AR training over the DIS network."

In addition to using VR-Link to network aerial refueling simulations, QuantaDyn also used the MÄK product to install a Distributed Missions Operations (DMO) upgrade to their low-cost desktop Boom Operator Simulation System, the MicroBOSS. The MicroBOSS brings the high fidelity simulation of a full size trainer to small form application.

VR-Link is a very straight forward package to use. The QuantaDyn software engineers were able to install the software and use it almost immediately. "This allowed us to hit the ground running in all of our development efforts," said Parker.

When asked if and why QuantaDyn would recommend MÄK products and services, to other organizations, Parker stated that, "[MÄK products] work just like MÄK says they will. They are easily modified for unique applications and all areas of the MÄK team are top notch from sales to technical support."



QuantaDyn's MicroBOSS