

## McDonald Research Associates Builds Homeland Security Trainers with MÄK VR-Forces

McDonald Research Associates develops affordable tactical trainers. Their two products, SecForDMT and Eagle Defender™ address issues broadly applicable to homeland security including anti-terrorism, security, incident response and force protection. SecForDMT (developed for AFRL in Mesa, Arizona) supports force security training for Air Force base defense. Eagle Defender, based on SecForDMT, provides homeland security situation assessment training, allowing decision makers from multiple organizations to practice incident response and damage mitigation of a terrorist attack. Both were built using the MÄK VR-Forces computer generated forces (CGF) toolkit.

"Our goal was to produce training tools that were affordable, usable and valid," explains Bruce McDonald, owner of McDonald Research Associates. "Our affordability goal required that the tool run on standard PC's and that no on-site technician was required to operate the system. With no on-site technician, the trainees and instructor must be able to operate the system directly. Therefore, a great deal of effort was expended to make the system user friendly. Since VR-Forces took care of the underlying simulation functionality, most of our project resources were devoted to developing a friendly user interface."

"In order to make the simulation valid, we devoted considerable resources to creating valid behaviors, communications, and weapons performance," explained McDonald. "VR-Forces flexibility and clean API made these tasks easier."

Creating homeland defense trainers requires simulation of a complex strategic environment, including neutrals, unconventional warfare, and joint action. The developers had to eliminate the omniscient views of threat, neutral and friendly locations normally provided by CGF tools. MRA has developed two separate displays for training and review; a tactical map and a God's Eye View. The tactical map simulates a paper map that the leaders would use in the field. Trainee leaders and decision-makers are provided with the same information they have in the real world, primarily radio reports. Trainees place symbols on the simulated map to mark

locations of their forces during the exercise, along with suspected locations of threats, friendlies and neutrals based on situation reports from their simulated forces. During after action review, the trainee sees the God's eye view, which shows the actual locations of threats, friendlies, neutrals and the trainee's forces as well as the suspected location symbols indicating where the trainee thought they were. These comparisons help the trainee to develop Situational Awareness, which has been found to be one of the hardest things for new leaders to learn.

The forces in the trainers don't always fight to the death. While opposing forces are capable of lethal force, they don't automatically shoot given the opportunity. Neutral CGFs are capable of a range of behaviors, from peaceful intent to lethal force.

"Developing the complex and variable behaviors for the trainers was a challenge," explains McDonald. "VR-Forces took care of all the moving, detecting, shooting, dying and network communications so we could concentrate on the higher level behaviors we wanted to create."

Currently homeland defense training is conducted through large field exercises where the authorities from federal, military, state and local agencies come together to practice interagency cooperation. These exercises are extremely expensive and require a great deal of planning and coordination. Eagle Defender and SecForDMT can be used for initial training and mission rehearsal before and between these field exercises, allowing decision makers to practice their skills without the expense and complications associated with live training.

"We set an aggressive schedule for development and we've met all the milestones," said McDonald. "VR-Forces provided us with a jump start in development which helped us meet our goals without sacrificing vital features."

For more information on SecForDMT or Eagle Defender, please contact McDonald Research Associates at [info@mrasociates.com](mailto:info@mrasociates.com).