Transforming Local Government Case Study

Virtual Emergency Command Training for Operational Readiness – A New Approach to Training Firefighters

City of Allen, Texas
Peter H. Vargas, City Manager

Bill Hawley, Fire Chief, Allen Fire Department – Primary Contact, Presenter
310 Century Parkway   (p) 214.509.4401
Allen, TX 75013   (e) bhawley@cityofallen.org

Kurt Hall, Assistant Fire Chief, Allen Fire Department – Presenter
310 Century Parkway   (p) 214.509.4402
Allen, TX 75013   (e) khall@cityofallen.org

Jonathan Boyd, Division Chief, Allen Fire Department – Presenter
310 Century Parkway   (p) 214.509.4404
Allen, TX 75013   (e) jboyd@cityofallen.org

<u>**INTRODUCTION**</u>

According to a Norwegian proverb, "Experience is the best teacher, but the tuition is high." No place has this been truer than in the ranks of the brave men and women who serve their communities as firefighters. Firefighters pay an incredibly "high tuition" to attain the level of expertise necessary to perform their dangerous and difficult jobs. It traditionally takes years of on the job experience, countless hours of training, and great risk to life and limb for a firefighter to become proficient at his/her job.

What if there was a way to "lower the tuition"? What if you could increase the capacity of your community's firefighters without putting them at risk of death or injury while they gain this essential experience? What if there was a way for new firefighters to perform at the level of a seasoned professional in a fraction of the time? What if your fire department could quickly develop new skills for your long-term firefighters to manage developing risks to your community? What if fire professionals in small and volunteer fire departments had access to training resources comparable to the largest fire departments in our country without the cost?

<u>**SYNOPSIS**</u>

INTENT:
For the men and women of the Allen Fire Department (AFD) in Allen, Texas, this scenario is a reality. Well, it is a 'virtual reality'. Utilizing interactive gaming computer technology, our firefighters are able to enter virtual burning buildings and hone their suppression and decision making skills. The Allen Fire Department's V.E.C.T.O.R. (Virtual Emergency Command Training for Operational Readiness) program is far from being a video game; it is a multi-person, interactive environment that responds to the actions of those being trained in it. If the firefighters utilize the right strategies, tools and tactics, the scenario reacts accordingly and is resolved. Should one or more of the firefighters fail to perform a task or make an incorrect decision, the fire will grows and spread just as it would in real life. Without appropriate and timely actions, the fire, heat and smoke will spread throughout the building, firefighters can be burned and injured, and victims will perish. Unlike in the real world, this virtual world can be reset with the push of a button. The firefighters can immediately redo the fire using what they have learned. The best part is that the firefighters do this all in the safety of a virtual environment. No one gets hurt. No equipment is damaged. The firefighters can hit a pause button and respond to a real emergency.

OUTCOMES:
Overall, the implementation of the V.E.C.T.O.R. program has improved the level of service the AFD is able to provide to the community. The firefighters have quickly built their confidence, developed teamwork and acquired new skills. Because each firefighter has the opportunity to repeatedly train for any number of unique incidents before they happen, they are able to arrive on the scene of an incident prepared to proactively engage the situation rather than improvising as the incident unfolds. The ability to make the correct decisions at a faster rate improves the quality of the response to an emergency which, ultimately improves the health and safety of the community. Additionally, firefighters that are extensively trained in fire response strategies can achieve and often exceed the performance of their "more experienced" peers. For example, a battalion chief with five years experience and extensive

exposure to incident command simulation training can equal or exceed the performance of a battalion chief with 20 years of experience gained through traditional means. Individual firefighters also have a better understanding of what the incident commander is trying to accomplish at a strategic level, which will give them an increased understanding of what they need to do to perform more effectively. This enhanced level of understanding also goes a long way toward increasing firefighter safety.

COSTS & SAVINGS:

The actual cost to set up and operate the technology necessary to run the incident command simulation training software will vary depending on existing IT infrastructure. The initial investment may range from $10,000 to $20,000 and may include: simulation software, desktop computers with monitors, and the local network hardware.

The benefits and potential savings produced by the use of V.E.C.T.O.R. include:
-   Quality training opportunities that effectively supplement live fire training exercises. Fire personnel can train more often for little to no additional cost relative to traditional training methods.
-   Fire departments are able to decrease the time apparatus are out of service due to training schedules. This enables fire departments to maintain short response times and decrease "wear and tear" on equipment.
-   Fire departments are able to avoid training related injuries to firefighters. Tragically, firefighters are killed each year in training scenarios.
-   Ability to engage in inter-jurisdictional exercises to practice responding to large scale incidents at a fraction of the economic cost relative to a traditional large scale exercise.

INNOVATIVE CHARACTERISTICS:

The AFD is adapting a state-of-the-art computer program (FLAME-SIM) to create a setting that helps firefighters eliminate mistakes by training communication and decision based procedures in a realistic and dynamic environment. V.E.C.T.O.R. helps firefighters improve the speed and quality of their decisions through exposure to repetitive training in a variety of scenarios.   Due to the fact that each firefighter involved in the training session participates in immediate after action reports, the post incident critiques serve as an effective learning tool which help each participant know what went well, what didn't go well, and what they can do differently in the future. The overall V.E.C.T.O.R. program helps to create an environment where firefighters improve how they think which ultimately improves their ability to respond when confronted with a real life incident. The AFD is the first fire department in the nation to use the FLAME-SIM software for this type of training. The AFD has worked closely with the software developer to create this a viable tool to power our V.E.C.T.O.R. training program.

OBSTACLES:

The main obstacles include cost, leadership, buy-in, and a commitment to training consistency. Like all new programs, V.E.C.T.O.R. requires financial resources to purchase the training software and related technology (the good news is that V.E.C.T.O.R. requires less money relative to alternative training options). But V.E.C.T.O.R., as a training program, requires more than just software and technology. It requires willingness by department leadership to embrace and support this new type of training

environment. V.E.C.T.O.R.'s success in Allen is due in large part to support by the AFD leadership. Another important obstacle to overcome is buy-in at all other levels. V.E.C.T.O.R. was quickly embraced by younger firefighters who are often more accustomed to computers and gaming technology. Initially, many veteran firefighters were hesitant to commit to this nontraditional way of training. Nevertheless, because the virtual training experience was so realistic, veteran firefighters also embraced the program and recognized its value. Finally, there must be a commitment to consistently using this training program. Because the virtual environment is so realistic and the firefighters' on screen characters experiences all the same effects of the physical world, there is the temptation for one character to 'accidentally' spray another firefighter with a hose stream or drop an axe on another firefighter's head. Without a strong commitment to training consistency and proper utilization of the software, there is a possibility the training can degenerate into play time.

RESULTS:
Current research, as part of a Ph.D. dissertation, is being conducted regarding the use of a computer-based simulation training program for the enhancement of fire ground incident commander decision making. While the research study is on-going, it is hypothesized that computer-based simulation will have a positive effect (increase) in the efficiency/accuracy of decision making fire ground incident commanders. This hypothesis is supported by research conducted in other disciplines where personnel operate in similar environments.

REAL WORLD PRACTICALITY & PRESENTATION:
If selected to present our case study, we are prepared to demonstrate how the AFD has implemented the V.E.C.T.O.R. training program in our department. We will also be able to demonstrate how the program is operating and provide measureable results that show the effectiveness of the program in improving the decision-making ability of firefighters. This program is applicable to other local governments in that this training program can be set up in any fire department (we are currently training other fire departments in our region on the use of our V.E.C.T.O.R. program). As other fire departments improve the speed and quality of their decision-making, their communities will ultimately be safer as well. We will be prepared to provide video, a PowerPoint presentation and a live demo (if desired) in our case study presentation. A demonstration of this technology will readily reveal the value and benefit of the program.