

Learning & Development

Joined up command training with Team Trainer

Fire and rescue services throughout the UK need to train their commanders to work together as teams.

VectorCommand's Team Trainer extension, which adds extra functionality to its Tactical Command Trainer – Fire training system, gives them a proven solution for doing so, reports **Stephen Prendergast**

ALL FIRE AND RESCUE SERVICES HAVE

a requirement to train and exercise their commanders to ensure that they are competent to command incidents of various different types and scale. Almost all UK fire and rescue services use VectorCommand's Tactical Command Trainer – Fire system, the virtual reality-based training package, to fulfil their requirement for nationally consistent, doctrine-based command training of individual officers.

But fire and rescue services also need to train their commanders to work together in teams, following command doctrine laid down in the officially mandated UKFS Incident Command System (ICS). Fortunately there is a solution to this command training dilemma – the Team Trainer extension to the Tactical Command Trainer – Fire system, which is ICS-compliant.

With the Team Trainer extension fire and rescue services can train teams of commanders to work together throughout a single virtual incident, thereby delivering even greater value for money from brigades' training investment. Using Team Trainer software and networked laptops (supplied as a system package) up to four sector commanders and an incident commander can view separate sector screen views of a wide variety of common fire scenario types – a burning stately home, for example (see illustrations).

Trainee commanders can make decisions on the progress of a fire, requesting additional fire appliances and deciding how they want to deploy their virtual firefighters within the overall context of the incident. To gather incident information they can



Incident commander and sector 1 commander's view of Stately Home scenario within Team Trainer extension of Tactical Command Trainer – Fire virtual reality-based training system;

interview virtual occupants, emergency personnel and neighbours and, using handheld radios, share incident and decision information between themselves and their incident commander.

The simulation system has an artificial intelligence system designed to replicate events, such as fire spread, emergency service actions, behaviour of casualties and operations of other key agencies at an incident. The system recreates:

- The sounds experienced at an incident
- Fire spread
- Heat transfer
- Extinguishment
- Re-ignition
- Smoke size and direction
- Emergency service operational procedures
- Equipment operation
- Water usage and water problems
- Incident casualty behaviour
- Incidental people interaction (concerned relatives)
- Other emergency service interaction
- Organisational chains of command
- Automated resource management (sector commander/breathing apparatus main control/staging/marshalling).

Using its artificial intelligence, the system is able to react to decisions made by the facilitator or student. Each station installed with the TCT – Fire allows the facilitator to configure each scenario.

It has a range of software tools that allow the following:

- Selecting scenarios
- Setting up initial conditions
- Weather conditions
- Number and type of resources (vehicles and personnel)
- Briefing information
- Starting conditions during the simulation
- Controlling the operations during the simulation
- Controlling resource levels during the simulation
- Recording the exercise for debrief and assessment
- Playback of the exercise for debriefing
- Comprehensive scenario construction tools
- Comprehensive training management and assessment system.

System Functionality Map Screen

The map system displays the positions of Fire Service resources, any hazards found including fire, and a representation of the local geography.

The icons that represent those risks or resources can be hidden or shown to enhance the clarity of the map's information. The path taken by teams is indicated to show which areas have been searched and are now clear. Clicking on an icon displays the resource option menu. From the resource option menu, a resource can give a situation report, be deployed to a location, given a task, briefed, or withdrawn.

by Stephen Prendergast

Resource Management Screen

The resource management screen represents each individual fire service's resources on scene and whether they are available for use or allocated to another fire. This allows the user to see quickly what resources are available for deployment.

Fax Information Screen

A fax and an electronic information screen system are supplied from which requested information is displayed. Once the Commander requests information, a realistic time delay occurs before it arrives. Once the information has arrived it can be printed and issued. Typical information would include weather forecast information, cargo manifests, chemical data, evacuation zones etc.

Communications Log Information Screen

The system provides a communications logging screen. Requests for information or resources, responses of both simulated and real players and radio traffic are recorded and displayed in a time-stamped format. This screen also displays the roll call of all the personnel at the incident.

Communications Screen

The system has a communications screen from which requests for information and extra resources are made. Control of the simulated radio traffic and command mode alteration is also located here. Specific risk assessments and other messages to be sent back to headquarters are logged here, either by a typed or a recorded audio message.

Virtual Reality View Screen

The system is supplied with virtual reality view screens, one for each incident sector (see illustrations). This gives a visual representation of the fireground, the condition of the fire and the firefighting operations in action. The Commander can either walk around the fireground using the joystick, or, when they become available, operate the Closed Circuit TV cameras located on the command vehicle.

Exercise facilitators can select other participants' viewpoints and literally "see through their eyes". All participants have virtual bodies, so that sector commanders can see where their other command team members are located within the simulated incident ground.

Organisational Chart Screen

The system is supplied with an organisational chart system. This allows all the organisational structures of the involved agencies to be displayed and modified. These modifications will then affect the simulation



An aerial view of the Stately Home scenario. With the Team Trainer extension fire and rescue services can train teams of commanders to work together throughout a single virtual incident, thereby delivering even greater value for money from brigades' training investment

in a realistic manner.

Here, personnel can be allocated to a role, command structures set up, and access to a behaviour menu option given. From the behaviour option menu, the behaviour can be deployed to a location, given a task, briefed, and withdrawn.

Video Conference Screen

The system has a video conference facility. This allows the trainer to speak to any or all of the students at each team training station. This allows either questions to be asked and answered, or for the trainer to pretend to be a character, ie police officer, and to give relevant information to the students. The system allows exercise participants to communicate using video, audio and text conferencing.

Post Simulation Review

During the exercise, thousands of events are recorded and logged for the post-exercise review. The TCT – Fire system includes a unique review system that allows the training facilitator to replay the exercise to the students. The view from every student's position can be seen and his or her actions evaluated. The review software has the ability to jump forwards and backwards in exercise time so that participants can see the consequences of a particular action or event. It is possible to review all information given to a trainee and then see what action they took in response. This review log is recorded and maintained in the user records program, enabling its review at any time in the future to compare students' progress.

The Team Trainer version of the system consists of two components:

- Tactical Command Trainer – Fire main server laptop
- Up to four Team Trainer (TT) client laptops.

Team Trainer greatly increases the number of students capable of being trained as more students can be trained simultaneously. Additionally, as other sectors are being controlled by other students, each trainee sector commander or incident commander sees the actions and positions of the other sector commanders, making the training completely immersive and dynamic. Because it shares a common software heritage with VectorCommand's Command Support System the Team Trainer can also be used to support training for users of the Command Support System.

Kent Fire and Rescue Service is a very active user of both the standalone Tactical Command Trainer – Fire system and the Team Trainer extension. It uses the system as part of a structured programme of command development, including interactive lessons, during which challenging questions are used to provoke fresh thinking about how to assess the risks associated with common firefighting situations. Later, working within the Tactical Command Trainer – Fire system's virtual fireground, in both single command and Team Trainer modes, new commanders can gain valuable, realistic fireground command experience. The result is better trained commanders capable of making well informed decisions in real fire incidents.

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