

# LEARNING TECHNOLOGIES

*Technology-based simulations in  
Command and Control Training*

## PUBLIC ORDER

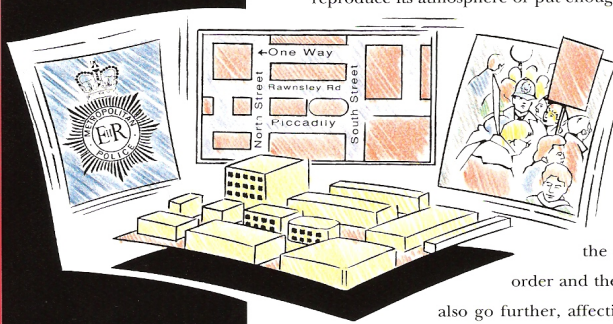
### The Background

One of the most important elements in the training of police officers is the handling of public order events including marches, demonstrations and big spectator events such as football matches. The ability to detect potential trouble spots and take action before they get out of hand is an essential skill for officers in command on these occasions.

In the past training has been confined to paper-based exercises which, however useful in conveying the logistics of the occasion, cannot reproduce its atmosphere or put enough pressure on trainees to prepare them for actual and often dangerous events.

The development of computerised simulations with interactive video has brought a new actuality to the training of those responsible for the control and command of public order and the containment of disorder. It may also go further, affecting many related fields involving large numbers of people in potentially life-threatening situations.

Two programs with complementary aims and facilities, called Cactus and Vistrain, have been developed by the Metropolitan Police Force and the Scottish Police Force respectively, in association with the University of Leeds and the National Computing Centre. Both have been funded by the Employment Department.



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## **VISTRAIN: For Crowd Control at major Spectator Events**

This system was developed to help train police supervisory officers in crowd control at major spectator events including football matches. It uses technology-enhanced training in a group learning environment. It can also have a significant impact on management training methods in a variety of fields, including the fire, ambulance and coastguard emergency services, as well as private organisations with responsibility for spectator events.

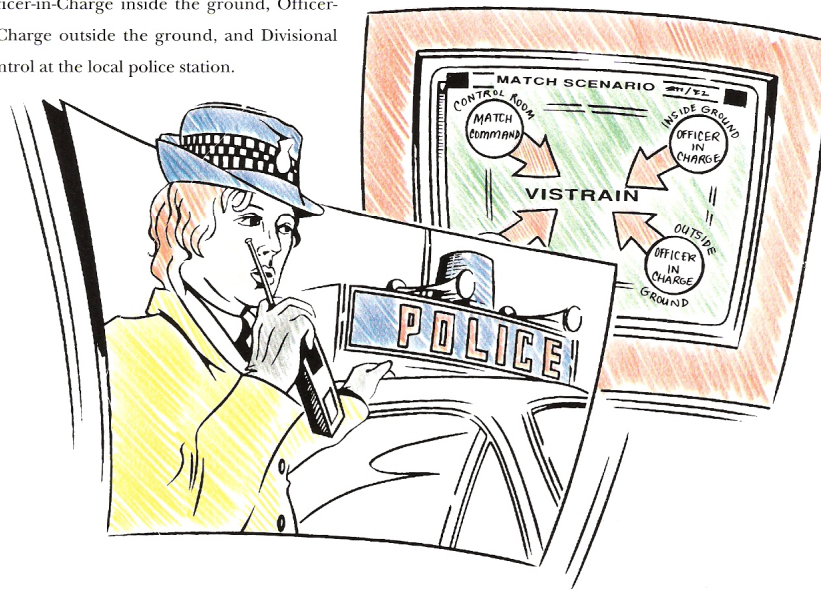
Vistrain is comprised of a set of four interactive video team workstations, based on Commodore Amiga 2000 computers and Sony laservision videodisc players. These are linked to the trainer's workstation, from where the exercise is controlled.

The sixteen participating senior officers attend a simulated briefing in four groups, each group taking on one of the four key roles: Match Commander in the control room, Officer-in-Charge inside the ground, Officer-in-Charge outside the ground, and Divisional Control at the local police station.

The exercise is divided into four scenarios: pre-kick-off, first half, second half and dispersal. The groups are given potentially serious incidents to respond to, such as forged ticket selling, illegal entry and tear gas explosion, which are conveyed by video, radio or telephone message. The groups discuss the actions to be taken and relay their decisions by personal radio to the appropriate group, which must then respond to the message and decide on its action.

After the first scenario has been played, a debrief session is held. The system helps the trainer to select those events where wrong decisions were taken or communicated incorrectly and these are reconstructed by combining video cues with the groups' radio messages.

The remaining scenarios are played in a similar way with the groups changing roles, so that by the end of the exercise they have had a chance to experience all four management responsibilities.



## **CACTUS: The Policing of Public Disorder**

This program uses computer-based simulations of large crowd events, such as marches and demonstrations, to improve trainees' planning and decision-making skills. The programs can be adapted to suit particular training requirements.

The simulation uses Ordnance Survey digitised maps showing roads and buildings, representing the static world. On to this, dynamic objects known as agents - demonstrator group and police units - can be programmed with a repertoire of behaviour that changes according to the actions and reactions encountered en route. This 'world' model operates in real time with potential behaviour changes taking place at approximately 20-second intervals. A referee module provides any necessary arbitration.

The trainee can use these facilities to pre-plan the placing of resources for effective policing. While managing the event, he/she will see the map displayed with police unit locations, but will only be informed of events arising in the 'world' model through incident reports shown in a communication window. Information can be requested from the units and strategic or tactical instructions given in response. The computer system can also provide memory aids to locations, status and events. A complete communication record is maintained and all

the data is stored for filtering and organising in various ways. This enables the debriefing discussions to focus on events and decision-making right across the map or at particular locations.

The knowledge base of the simulation and its functional design are the result of extensive collaboration with the Metropolitan Police Office, which provided demonstration reports, pre-event briefings and control room attendance facilities during the management of large events.

The work of the Project has been presented at seminars in the University of Leeds and at a seminar of Simulation Techniques for Learning organised by the Institute of Electrical Engineers in London. However, the most important and comprehensive meeting took place at a National Workshop in November 1991, where the Department of Employment presented a video showing the three related Command and Control projects undertaken with their support. Hands-on demonstrations allowed close discussion of the techniques and their value to training.

As well as acting as a training aid, CACTUS can also be adapted to assist the planning and management of actual incidents.

The system uses Garnet/Common Lisp on a SUN Workstation with XII/Motif and incorporates text-to-speech equipment produced by APTECH.

## **Evaluation**

To evaluate the success of the 'Vistrain' exercise, the members of five Newly Promoted Inspector's Courses and one Accelerated Promotion Course were asked to complete questionnaires - 72 students in all. The following selection of questions and answers indicates the generally positive response accorded to the programs:

### **Did the exercise achieve all of its stated objectives?**

'The creation of a real-life incident created pressure whereby on-the-spot decisions had to be taken. Excellent presentation, which achieved all it set out to do.'

### **How far did the exercise go towards simulating reality?**

'The noise and distraction combined to generate pressure and tension.'

'I consider it to be as close to reality as could be achieved in a classroom.'

### **Did you find the exercise demanding?**

'Concentration had to be maintained and decisions made quickly.'

'The very real problem of trying to communicate by radio at a football match, where noise level is high, was especially true to life.'

### **Was the technology easy to use?**

'A very user-friendly system, quickly absorbed.'

'Basic skills in use of personal radios and computing were all that was required and officers at our level should possess these skills.'

### **How does the exercise compare with the paper-feed or table top type of exercise?**

'Far superior - the situations, atmosphere, noise, poor radio reception and messages (which altered as they passed from point to point) were all very real and impossible to simulate on paper.'

In October 1991, Vistrain won two awards from the British Inter-Active Multimedia Association in the categories of Bespoke Training and Innovation. In the same year it was selected as one of two finalists from 31 nominees at the European Training Technology Event in Vienna - eventually winning first place after a ballot of the 400 delegates.

The potential for both these real-life simulation programs extends into every area of crowd and traffic management. The speed of response they make possible is transforming the capability of commanding officers to maintain or quickly restore order.

The software systems developed can be used on any PC that takes commercially available software and can be adapted to meet the needs of trainers and the experience of trainees. Thus a wide range of possible public order and safety scenarios can be produced from the same basic software package.