
THE VISTRAN TRAINING SYSTEM

FOR POLICE MANAGEMENT OF

MAJOR INCIDENTS

A computer-based system to assist
in the delivery of training
to police officers responsible
for managing the effects
of major incidents

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SUMMARY

The aim of this project was to develop a computer-based system to help train police officers in managing the effects of a major incident.

Before the development of VISTRRAIN, training was either paper-based exercises, which were largely analytical and lacked team inter-action, or else was a full scale "live" simulation, which took months to plan, was expensive to carry out, and tied up large amounts of personnel and resources. The other form of "training" took place during an actual incident but there were obvious drawbacks in allowing inexperienced staff to gain vital skills in a real-life situation.

The main objective in building a major incident training system was to enable participants to learn that managing such an incident is a complex and subtle process in which many factors have to be considered when solving problems or making decisions. The thinking behind the system was that major incidents have demonstrated the importance of planning and training for the co-ordination of emergency services.

Therefore, its purpose is to create a realistic environment which stimulates the kinds of higher order thinking skills needed in actual major incidents, which allows these decision-making and communication skills to be practised. It also enables the level of performance to be monitored and commented upon by expert practitioners or trainers.

The system covers:

- the knowledge and procedures required to determine breaches of hazardous chemicals legislation
- the management of a major incident; a road tanker carrying hazardous chemicals colliding with a passenger train at a level crossing in a built-up area.

The project was funded by the Department for Education and Employment and principal partners were the Scottish Police College and the National Computing Centre. Training is delivered via five networked PCs, all with multimedia capability and able to provide individual training or group role-play.

CHAPTER 1: INTRODUCTION TO THE PROJECT

The principal partners were the National Computing Centre, which took on overall management responsibility, and the Scottish Police College based at Tulliallan Castle, Kincardine which is responsible for police training.

This partnership has worked together previously in developing the original VISTRRAIN system for training senior police officers in crowd control at spectator events. This system has won three awards from the British Interactive Multimedia Association, a National Training Award and the European Training Technology Event Application Award, the premier award in Europe.

In order to design and develop an effective computer-based major incident training system, an understanding was needed of the police's areas of responsibilities in such circumstances. These are, primarily:

- the saving of life in conjunction with the other emergency services
- co-ordination of the emergency services and other subsidiary organisations
- the protection and preservation of the scene
- the investigation of the incident, in conjunction with other investigative bodies where applicable
- the identification of victims
- the collation and dissemination of casualty information
- the restoration of normality at the earliest opportunity.

As there is no one ideal response to disaster, no single agency or emergency service can resolve a major incident in isolation. It is essential that the response is co-ordinated and a genuine team effort.

The Scottish Police College required a training approach which served the middle ground between the written exercises and the full scale mock-ups and which would produce the pressures, stimulus and realism of the mock-ups at a cost nearer to that of the written exercise. Experience of the VISTRRAIN crowd control exercise developed previously by the College and NCC suggested that the methods embodied in that system could be used for the development of a major incident exercise.

CHAPTER 2: PROJECT DEVELOPMENT AND OUTCOMES

The aims and objectives of the project were:

- to build a system which demonstrated the many and complex factors that contribute to the solving of problems or the making of decisions surrounding a major emergency
- to create a realistic environment in which these subtle decision making and communication skills can be learned, understood and practised
- to enable the level of performance to be monitored and commented upon by expert practitioners or trainers
- to provide a cost-effective training tool that provided a viable and realistic alternative to written exercises and full scale "live" simulations.

It was for use by specialist police traffic officers and police supervisors/managers/ and personnel from fire services, ambulance, pollution inspectorate, Health and Safety Executive, local authorities, health boards, court officers, relevant industry representatives and voluntary services.

National Computing Centre had overall responsibility for managing the project and for instructional design, programming, installation and integration, and project documentation. The Scottish Police College was responsible for scripting, liaising with multi-agency experts, video production and editing, pilot trials, brochure production. The project was managed by a parent/steering group concerned with strategy, policy and management, and a working group concerned with technical/developmental decisions on a day to day basis.

The original plan was to create an exercise divided into five phases, from initiation of the major incident through to the declaration of safety. Ideas and information on the exercise scenario were obtained from other emergency services and relevant agencies and an outline of the events to feature in the phases was drawn up. At this point, the required phases were reduced from five to three.

Subject matter for Phase 1 was gathered after going out on police Hazchem patrol on the M62 motorway and a photo CD of the tanker was taken to be incorporated into the multimedia programme. NCC personnel observed a full "live" major incident training exercise in Scotland. Footage shot at the exercise was developed for use in the training system.

By December 1994, 12 months after the first planning meeting, a trial system had been developed and tested at the Scottish Police College and was submitted to a full test design and design review. Multimedia assets continued to be developed. The following month, the pilot system was installed and implemented at the College.

In February 1995, further technical changes and enhancements were implemented. The original date for completion of the project was reached in March with work still in progress, so further work was commissioned from NCC by the Scottish Police College to assist in developing and finalising the multimedia elements for Phases 2 and 3. In May, the system was demonstrated for an interim evaluation.

Development of the system fell behind schedule for several reasons:

- a switch from Amiga to PC as the delivery platform
- changing the project from five phases to three
- changing Phase 1 from a joint venture to one undertaken solely by the Scottish Police College
- adopting MPEG as the video standard.

However, the result is a more robust and adaptable training system running on the PC standard.

There are four outcomes of this project:

- A training exercise divided into three phases designed to deliver two separate but related types of training relevant to major incident management. The major incident is that of a road tanker carrying hazardous chemicals colliding with a passenger train at a level crossing in a built up area. Phase 1 covers the knowledge and procedures required to determine breaches of hazardous chemicals legislation. That training is delivered in a multimedia format on a stand alone basis and is intended for traffic officers. Phases 2 and 3 cover the management of a major incident and call in part on the knowledge gained in Phase 1 but is delivered on a group basis where the inter-action is between teams adopting roles demanding decision making and communications in response to events arising out of the major incident.
- A training system consisting of five networked PCs, one for trainer use, the other four for trainees. All have multimedia capability and can be used for stand alone training (as in Phase 1, the Hazchem exercise) or learning through group role play (as in Phases 2 and 3, the major incident exercise).
- A PC based software shell into which multimedia assets e.g. digital sound, stills, video and text, can be configured to create different training scenarios which conform to the VISTRAIN approach of a facilitated exercise based on the delivery

of problem setting event cues.

- An advanced software program which is highly flexible and adaptable to a number of "command and control" training scenarios. The program has many behind-the-scenes features, particularly in its flexible use of animation. The project has also achieved high standards for desktop video through the adoption of MPEG digital video and playback boards.

CHAPTER 3: SOFTWARE CONTENT AND APPLICATION

The major incident on which the software is based is that of a road tanker carrying hazardous chemicals colliding with a passenger train at a level crossing in a built-up area. The incident is divided into three phases. Each phase is divided into events.

In Phase 1, participants take on the roles of traffic officers stopping and checking vehicles carrying hazardous loads. This is a prelude to the major incident itself. Target users are specialist traffic officers who are expected to have a working knowledge of Hazchem legislation and procedures. The objective is to test knowledge and understanding of Hazchem legislation and how to apply that knowledge in a variety of situations.

There are ten events, each event presenting a different problem to which Hazchem legislation applies. Within each event, participants inspect the vehicle on screen and determine compliance with the regulations. This is done by pointing to and clicking on-screen hot spots.

Workstation teams receive a mix of visual and audio information consisting of visual representations of different kinds of vehicles and loads subject to Hazchem legislation. These are:

- vehicle check for general safety
- domestic road tanker stop and check
- domestic tank container vehicle
- road tanker (ADR)
- road tanker (IMDG)
- packaged goods carrier
- packed goods open lorry
- unattended vehicle, dangerous load incident
- minor leak incident
- serious leak incident.

The representations make available all the textual and visual information needed for effective policing. This includes type of transport, emergency (TREM) cards stored in cabs, licence details, vehicle signage and close ups of vehicle valves, safety helmets, fire extinguishers etc. In addition, the vehicle can be viewed from all sides, the context in which the vehicle is placed is apparent, and some verbal information is available from the driver.

The events are portrayed using principally still images, 13 to 20 per event depending on the level of information required. Where appropriate, moving video is used to make certain teaching points, such as the importance of selecting a safe parking area for Hazchem vehicles.

Each event in Phase 1 is a self contained test of knowledge, but is designed so that as the trainee progresses through the events, he/she builds on the knowledge gained.

Phases 2 and 3 cover the major incident itself and are based on procedures and actions expected to be carried out in a real situation. The system captures as effectively as possible the conditions that exist in reality.

The events are based on actual episodes in the aftermath of a major incident and are designed to test decision making and communications skills. Events are simulated by stills, video and audio to set the context of time and place. They include managing traffic congestion, dealing with the media, co-operating with the other emergency services, ensuring the availability of resources and maintaining clear channels of communication at all times.

The actual collision is not shown, only its aftermath, and the events cover a fictional time of two-three hours to allow an extended time scale for strategic decision making. Phase 2 concerns the occurrence of the incident and the response procedures of the police to assess, confirm and prepare to manage the incident. Phase 3 concerns the arrival on scene of the Police Incident Officer who then takes on overall on-site responsibility. Progression then is towards effective co-operative working through clear communications and orderly approach to resource request and deployment.

Graphical maps give a plan view of the incident site. By clicking on-location hot spots, participants choose different views. The map is on screen at all times and changes as vehicles and resources arrive at and depart from the site. Resources include police, fire and ambulance vehicles and other vehicles likely to be present, such as broadcasting vans. These are represented by animation triggered by the trainer/facilitator. Further animation represents traffic management issues such as the build up of congestion, road blocks, the designation of one way systems and road closures. Participants can communicate with each other by a simulated radio system.

CONCLUSIONS

VISTRRAIN is an advanced software program which is highly flexible and adaptable to a number of "command and control" training scenarios.

Subject matter experts who have reviewed it say it has achieved its primary objective: to effectively portray the experience of managing a major incident from the police perspective. They say it represents the major incident situation well.

The system is robust and adaptable and runs on standard PCs. Police forces and emergency services will be encouraged to take up this training tool because it can be used on existing equipment. The potential of the system is excellent for all emergency services.

It is envisaged the system will continue to evolve as more is learned from training exercises as to how best to use the system.

NCC has demonstrated versions of the system to a number of interested forces in the UK. To date the response to the VISTRRAIN concept as a training tool has been positive.

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