Solutions Brochure

Visualizing *a New Era* in Training

Hazard Perception and Situational Awareness Training—an innovative and unique technology concept for improved safety, reduced training costs, and better learning outcomes

Almost two-thirds (64%) of adults in Australia involved in accidents listed the workplace or roads as common incident sites *(ABS, 1999, Survey of Disability, Aging and Careers)*. In the U.K., drilling and deck operation hazards accounted for 79% of all major injuries in offshore installations *(U.K. Health & Safety Executive 2000-01)*. Over the last couple of years the world has seen an increasing number of terrorist incidents—423 attacks were perpetrated in 2000 alone *(www.Infoplease.com)*.

The Situation

Safety and security are today the highest priorities on the public agenda. In the wake of global terrorism, economic uncertainties, and increasing public awareness of natural and man-made disasters, the mounting demand from the public sector for greater efficiencies and safety measures has become paramount.

Advances in visualization and simulation technology are opening up new possibilities for governments and businesses to meet these demands—creating training environments that significantly enhance people's ability to handle hazardous situations and improve day-to-day operational procedures.

Traditional testing and training methods are costly and, in some cases, limited if physical mock-ups present a real danger to trainees. In Europe, it costs the equivalent of USD$54,760 and 11 months to produce one fully trained train driver—with a minimum of 300 real-time training hours required to meet safety standards.

Using visualization technology, the cost and time required to train each staff person is drastically reduced and scenarios considered too dangerous to reproduce in the real world are now possible through virtual re-creations of live situations.

The Solution:

Hazard Perception and Situational Awareness Training (HAPSAT)

Silicon Graphics, Inc. (SGI) has created a unique new concept for training purposes—an integrated Hazard Perception and Situational Awareness Training solution that uses a combination of powerful visualization technology and state-of-the-art simulation facilities and software.

Situational awareness and response is vital to the safe management of systems. This technology provides organizations with a safe, controllable, repeatable, and measurable way of training and preparing staff for all manner of day-to-day situations, incidents, and potentially dangerous occurances. These simulations are presented in a way that is as close to real life as possible.

Working with industry and simulation specialists, Silicon Graphics has created a powerful tool that has the potential to be used in almost any market sector and for all levels of training. Customers can deliver advanced training programmes for a wide range of practices—including customer engagement, engineering maintenance, driver/pilot education, emergency procedures, and so on—depending on the specific needs of the organization.

Who Can Benefit?

Government—Homeland Security

Recent terrorist incidents, increasing cultural unrest, and a constantly changing global environment are creating an ever-growing need for improved homeland security measures. Using this visualization technology, government agencies and forces can better plan and prepare for any manner of unforeseen incidents—such as terrorist threats, biological threats, and natural disasters.

Military/Defense

SGI offers military forces the potential to train people in and understand the outcomes of real-life warfare situations—from tactical decision making and control of battlefield situations to harbor/airfield security. This training can answer the need for enhancing real-time situational awareness within command-and-control centers of military operations.

Solution:

Transport Sector

Transport organizations in any country constantly come under scrutiny for efficiency and safety standards. SGI is able to help transport departments more effectively and cost-efficiently meet quality-control needs. The group training capabilities mean large numbers of staff can benefit from realistic training scenarios. Whether it's rail, road, or shipping transport networks, SGI provides a completely realistic environment in which to rehearse all manner of day-to-day procedures and responses to unforeseen hazards—for example, rail signal failures, track floods, fires, and harbor docking procedures for ships.

Airport Operators

Air safety probably causes more concern and has more visibility than any other transport industry. Whether dealing with emergency landings, runway clearances, the maintenance of flight safety in snow or ice, midair collisions, or general airport security, staff members need to be highly trained in operational procedures and proficient in dealing with any number of potential problems. SGI can help operators better meet these needs through realistic environment simulations and incident re-creation.

Oil and Gas/Mining and Exploration

Competency assurance is a hot topic in the exploration industry. Past incidents, such as the North Sea Piper Alfa disaster, have resulted in the highly stringent safety procedures we see today. The complexity of the physical environment can make training and testing time-consuming, difficult, and costly in the effort to meet those measures. SGI® virtual reality solutions provide a groundbreaking way of safely and cost-effectively running safety-case scenarios—including reconstruction of incidents such as gas leaks, refinery fires, and underground emergencies where there are only seconds to react; offshore platform operational procedures; and familiarization for new staff.

Emergency Service

Although it's not always feasible for state authorities to physically re-create emergency incidents to train and assess response team capabilities, they can get closer to real-life testing using the SGI HAPSAT technology concept. SGI can build virtual, interactive scenarios designed to test the knowledge and decision-making skills of fire, police, and ambulance crews, offering emergency services a safe and cost-effective method of training response teams in unpredictable situations and environmental circumstances, such as multicar road accidents, trucks overturned on freeways, spills from oil tankers, and forest fires.

Entertainment/Civic Facilities

How effectively can operators of public facilities and events test a fire evacuation plan? Proving a safety procedure by, for instance, physically filling a stadium, setting it alight and running a crowd-control exercise is not a realistic option. Through SGI solutions, organizations have the ability to train staff to deal with any kind situation or potentially hazardous incident—such as sports stadium riots, bomb threats in shopping malls, or fires at concert venues.

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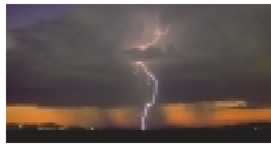
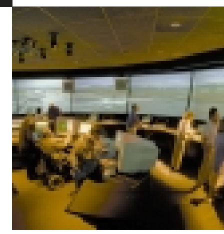
collaboration





How Does this Work?

A Hazard Perception and Situational Awareness solution provides a total, integrated training capability that encompasses components such as:

- SGI® Reality Centre™ classroom group training
- State-of-the-art simulator modules and control interfaces (e.g., to create trains, fire engines, planes)
- Needs analysis and scenario creation capabilities
- The potential for a remote networked training capability

At the heart of this visualization environment is the SGI® Onyx® 3000 series of high-performance computers. These provide the immense power required to process and visualize complex sets of data and drive multiple projectors in the immersive visual display.

This system integrates with industry simulation and management modules to enable effective creation of and interaction with realistic training scenarios.

Scenario Creation

A significant amount of planning goes into scripting the types of events that unfold within one of these training environments. Demanding scenarios require great subtleties to reliably reflect real-world circumstances.

These complex scenarios are designed to be fully interactive, cover any situation, and respond to a trainee's decision making with likely outcomes. For example, scenario creators have control over the weather, sequence of events, even the time of day—introducing unexpected elements where necessary to make an exercise as unpredictable as a real-life incident might be.

The fully reusable and measurable scenarios also offer trainers the ability to review and evaluate a trainee's performance in relation to a model answer.

Collaboration

Traditional training methods are linear. Emergency procedures are often rehearsed and followed individually and rely on assumptions that everybody else is doing his or her part correctly. Consequently, there can be a large margin of error whenever and wherever there is a break in the chain of response.

For the first time, individuals can now collaborate in an immersive, highly visual training environment, that enables interactive group education. People are able to learn from each other by training together in these real-life experiential environments. Not only does a collaborative framework offer greater training efficiencies, but it also encourages greater teamwork and problem solving as individuals are made aware of the thoughts and actions of others when responding to specific situations.

It is now possible to set up virtual group training, using SGI Visual Area Networking capabilities to bring remote, geographically dispersed people together to enable the same level of trainee collaboration regardless of location.

For further information about these solutions please contact:

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