

Abstract –

Virtual Reality Training for NSW Mines Rescue Brigadesmen

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New South Wales Mines Rescue has been using simulation based training as an integral part of their training since 2007.

The system developed by Mines Rescue allows Brigadesmen the opportunity to be immersed within a virtual environment such as an underground mine and test their skills with things such as establishing, advancing and managing Fresh Air Bases, optimizing search patterns without breaching line of sight (LOS) protocols, caplamp and other signal communications, route marking, patient triage and in field decision making.

For example, when doing a search, the system will monitor for breaches of LOS and provide a report at the end of the training session as to where and when the breaches occurred. As each of the training sessions are recorded for playback, any breaches of process and any other learnings can be discussed during the After Action Review. New recruits and experienced teams can learn from 'best practise' examples which are readily replayed.

Additionally, because the system can quickly load new scenarios, it allows brigadesmen the ability to have their skills rapidly and economically refreshed compared to traditional training methods – using significantly less resources.

An important element that Mines Rescue use as part of simulation based training is mixed reality training. By recognising that virtual reality is not a panacea for training, but instead is a tool that complements regular practical training, Mines Rescue uses a blended training approach.

The case study to be discussed is from the 2016 National Underground Mines Rescue Competition. The virtual reality scenario tested the rescue teams skills in searching, mines rescue protocols, communication with fresh air base and incident controllers, use of environmental monitoring equipment, mine ventilation knowledge, route marking and documentation and recording. During the simulation, a practical element was embedded incorporating a BG4 breathing apparatus failure.