

JDiBrief Security

Scenario based risk assessment for critical infrastructures: NEW KNOWLEDGE AND APPLICATIONS (4 of 5)

Author: Dr Tanya Le Sage, UCL Department of Security & Crime Science

The UCL Resilience of Infrastructure and Building Security (RIBS) team is developing a computing engine that can simulate hundreds of attack scenarios, and evaluate their consequences. The computing engine the team has built can, for example, determine the multiple paths that a terrorist may take through a synthetic environment. It can also account for the numerous actions that they can complete at each step of their attack.

Within the simulation environment each path that the offender (i.e. the player) can take is determined as a dynamic crime script. Crime scripts – borrowed from Environmental Criminology – represent a chronological sequence of causal events. For example, a suicide bomber may enter a building, move to a location where he wishes to explode the bomb, get the bomb into a state such that it is ready to explode, and then trigger it to cause an explosion.

Once this script has been simulated, and the likelihood of proceeding along the path has been determined, experts in explosion analysis carry out simulation based analysis to determine the consequences of the attack using criteria such as the number of fatalities, number of injuries, and corporate outcomes such as business continuity and reputation.

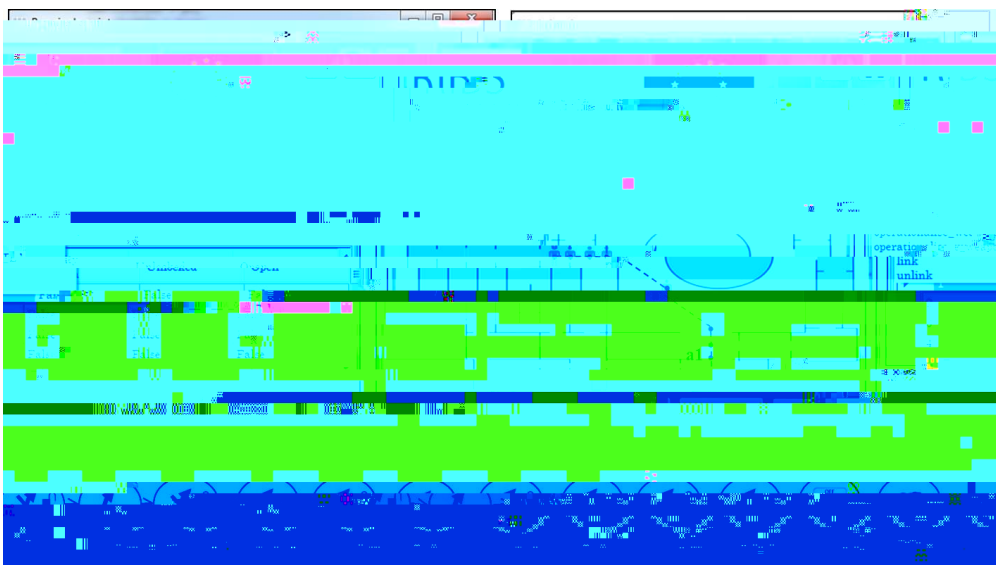


Figure 2 – a screenshot of the RIBS simulated terrorist script

Figure 2 illustrates where the RIBS software was used to model an attack script on a public target. The attack script described here shows an offender entering the building via the main entrance, and proceeding to move throughout the building until they reach a highly populated room. Once they have reached their destination, they attempt to trigger an explosive device. Upon the triggering of this device the consequences of the attack are estimated using simulation software. In this context, probabilistic risk analysis provides a useful framework to estimate the vulnerability of the facility to a terrorist attack, and identify areas where security should be enhanced.

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