

Hybrid Scenario Type “An Accident of a Tanker with Dangerous Substance”

Topic

The crisis has to be solved at the municipality level, where a hybrid war is also occurring. Organisation, management and execution of rescue work by the city's emergency crew after an extraordinary event – an accident of a tank truck connected with the leakage of a dangerous substance in the built-up area of a chemical factory. At the same time, it is necessary to respond to hybrid threats in the form of the spread of misinformation and to prevent the situation from escalating to such an extent that the management of evacuation and the implementation of measures in the provision of assistance to the endangered population is threatened in the affected area. The exercise takes place on a 32×15 km map with developed agglomerations with a population of 1,500.

Objectives of the exercise

Familiarising students with the possibilities of solving emergencies using RVS and the WASP constructive simulation system and practising the basic model of the activity of the town's crisis staff in an emergency caused by a traffic accident in a chemical factory associated with a possible leak of a dangerous chemical substance, in particular:

- practising the implementation of evacuation measures by the evacuation committee of the city in the example of the evacuation of a local elementary school and a shopping centre

¹ Armed Forces Academy of General Milan Rastislav Štefánik.

² “Nicolae Bălcescu” Land Forces Academy.

- practising the cooperation of the coordination centre of the integrated rescue system (IRS), the intervening units of the firefighters and parts of the crisis management at the local level
- the practice of removing the consequences of an emergency by the firefighter intervention unit and the forces of the city's crisis staff
- practising the activities of all components of the crisis team under the influence of hybrid threats
- verification of mastery of the content of basic legal standards and theoretical approaches of crisis management and the fight against hybrid threats in public administration
- checking the quality of students' readiness to fulfil the basic positions of crisis managers
- generalisation of knowledge from training and their use in implementing measures to protect the population from hybrid threats

Overall description

The city of Severny is located in the south border area of Slavland, near the border with Yellowland. 73% of the village's population comprises the Yellowland minority living in the territory of Slavland. The company Builder in the city Severny is an advanced chemical company in Slavland. It represents a successful combination of Slavland technical skills and knowledge with European solid plant management and market-oriented business experience. Builder Severny embarked on an ambitious program of investment, customer service, product quality and environmental improvement. A responsible attitude to business is the primary and permanent principle of the company Builder, which is the main contributor to the development of the economy, environment and social sphere in the region with an impact on the entire economy of Slavland. The company supports healthcare, education, charity, sports and culture projects. The company Builder is located at the foot of the Liptovska Mountain; from the east, its surroundings copy the inner city of the city Vychodny, and from the north, the village of Severny, and to the south, less than 2 km, is the city of Juzny, which is the administrative centre of the given locality. The company operates in more than five countries, has more than 30 production plants and employs approximately 11,000 employees, including 1,800 employees in the region and 1,200 employees in the supply network only in Slavland. More than half of the

employees commute to Builder for work from economically less prosperous Yellowland. In its business, Builder focuses primarily on producing chemicals, plastics and chemical products for agriculture, exploration, mining, and trading of oil and natural gas, as well as biotechnology and genetic engineering. The company is also behind the invention of expanded polystyrene, especially in the construction industry.

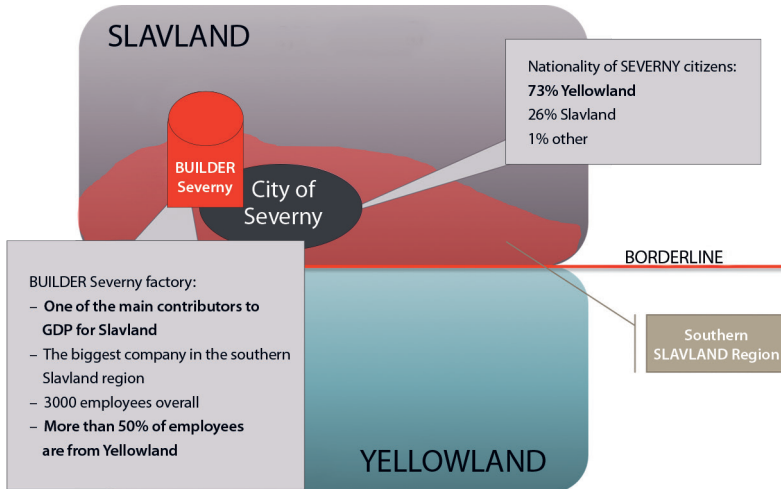


Figure 1: Diagram of the geopolitical situation of the subject

Source: Compiled by the authors

Political trigger of hybrid threats

The extreme right-wing government in Yellowland sees the acquisition of Builder under its administration as one of the possible tools to avert the country's impending economic collapse. For this reason, two years ago, an unsuccessful attempt was made to acquire a majority stake in Builder. This was to be done by causing an unwarranted panic and a subsequent collapse in the company's share price following a media report that its building products contained many toxic substances for humans. The reports also pointed out that the toxicity of the products is a fault of the technology itself and not of the manufacturing process, which

can be innovated. The claims above were successfully refuted by the certification of the company's products by European certification authorities, which made the impact of these accusations on customer confidence and subsequent orders minimal. After an unsuccessful attempt to take over the company, Yellowland began to finance political entities within the framework of the "Association for Open Borders", which last year, with the help of a massive election campaign aimed at supporting the Yellowland minority, won a 40% share in the city council of Severny. Their primary goal is to destabilise the integrity of Slavland by highlighting minority conditions in the region and using the subsequent unstable situation to annex the Southern part of Slavland to Yellowland. This would give Yellowland the production capacity and income of Builder company.

Special situation – The initial state of play for the simulation

At 09:00 a.m., there was a traffic accident involving a truck with a dangerous substance in the company Builder, and a fire broke out afterwards. At 09:10, a company employee called the IRS (Integrated Rescue System) to inform them about the situation. After receiving the information, the responsible authorities of District II of Severny and all IRS components were informed of the problem.

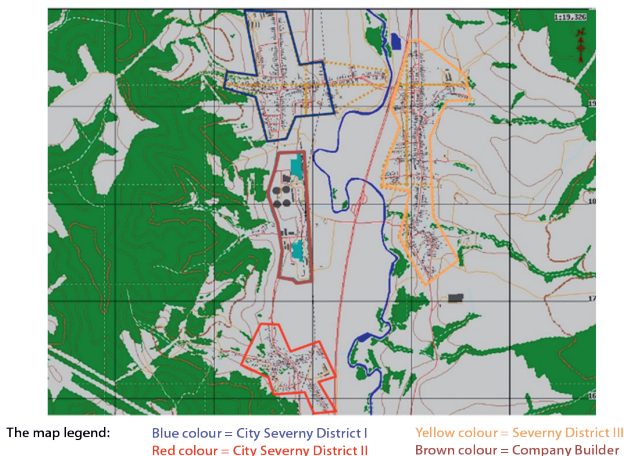


Figure 2: The 2D view of the programmed exercise scenario

Source: OTB ver. 2.5

The following figures represent some particular moments of the simulated crisis event, the solution of which will affect the hybrid action. In this particular case, the OTB ver. 2.5 constructive simulation software (images on the right side) and a virtual environment using the 3D image generator MÄK VR – Vantage (images on the left side) were used for the simulation exercise.

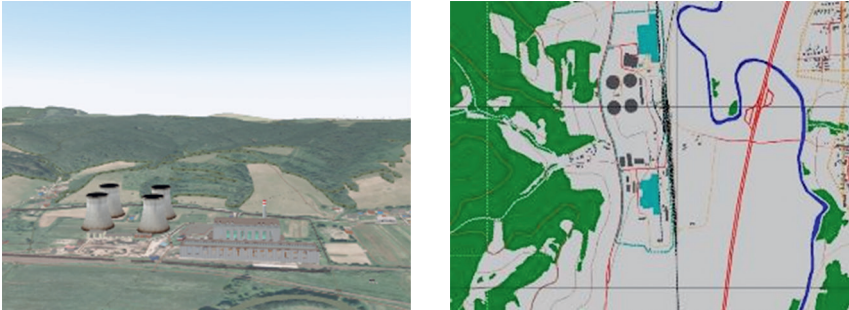


Figure 3: The 3D and 2D views of the Builder company

Source: OTB ver. 2.5; MÄK VR – Vantage

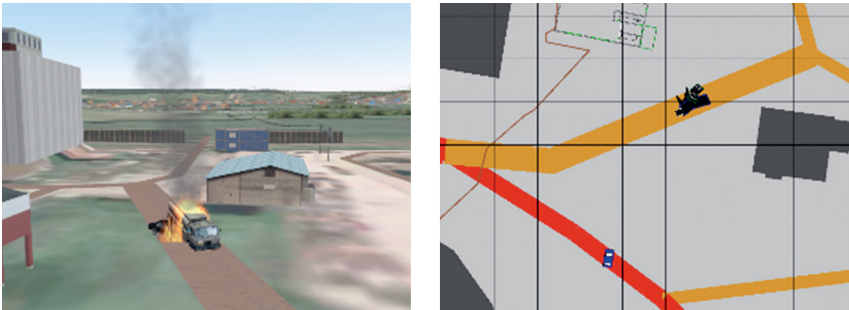


Figure 4: The 3D and 2D views of a collision between a tanker and a car

Source: OTB ver. 2.5; MÄK VR – Vantage

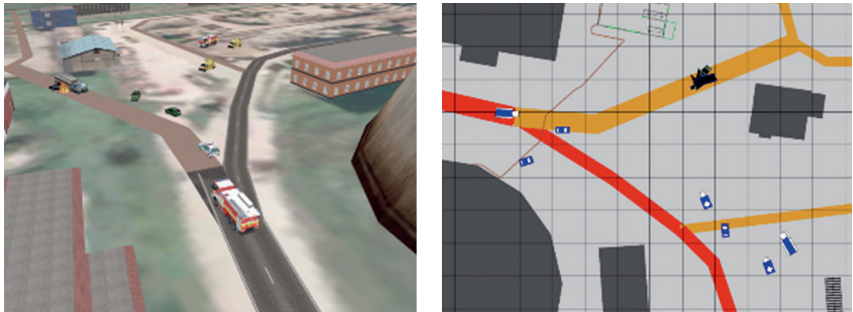


Figure 5: The 3D and 2D views of the responding units at the scene of the accident

Source: OTB ver. 2.5; MÄK VR – Vantage

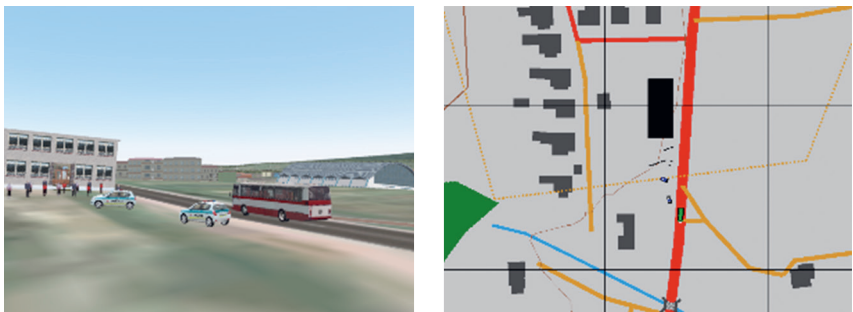


Figure 6: The 3D and 2D view of the controlled evacuation of people

Source: OTB ver. 2.5; MÄK VR – Vantage

The next chapters describe the realisation of the simulation exercise. The method used is the same for both scenarios introduced so far (see the previous two chapters). The hybrid threats layer is also elaborated similarly (presented in the previous chapter) in both exercises.

The group of participants and equipment

The participants (18 people in one simulation round) were divided into three groups, shown in the table below.

Table 1: The group of participants and the used equipment

Primary Group	The Crisis Staff – the decision-making body (5 persons) Map, documentation, means of connection, phone book, whiteboard, local radio station (reception and transmission), Office PC with access to the local WEB page of city, overview from the drone
Secondary Group	Crisis Staff – coordination part of IRS (4 persons) Digital map with GPS positioning of entities, documentation, means of connection, phone book, local radio reception, Office PC
Tertiary Group	Operation Part – on site intervention units (9 persons) Reconfigurable virtual simulatot, map, means of connection, local radio reception

Source: Compiled by the authors

The staff providing the simulation consist of 11 persons:

- *the director of the simulation* and his *deputy* – they keep the pulse of simulation time, record milestones in the development of the situation and prepare the after-action review; the deputy also fulfils the role of so-called *complicator*
- four *operators* – predetermined responsibilities for the activities of entities (objects, persons, natural forces)
- two *IT respondents* – forcing all the hybrid threats at the specified time, supervising the virtual cities WEB page, hacking the user accounts, spreading e-mails (legal requests of media, as well as phishing e-mails)
- one *communication manager* – supervising the communication over the radio and phone, also responsible for the voice recording
- the *simulation supervisor* – triggers the event horizon (simulation milestones that participants cannot influence, restore or bypass) and is responsible for recording the progress of the simulation using an application for constructive simulation

The distribution of workplaces

The primary condition is the physical separation of the groups of exercisers due to approximating the actual situation and the practice of effective communication. The layout of individual simulation groups is shown in Figure 7.

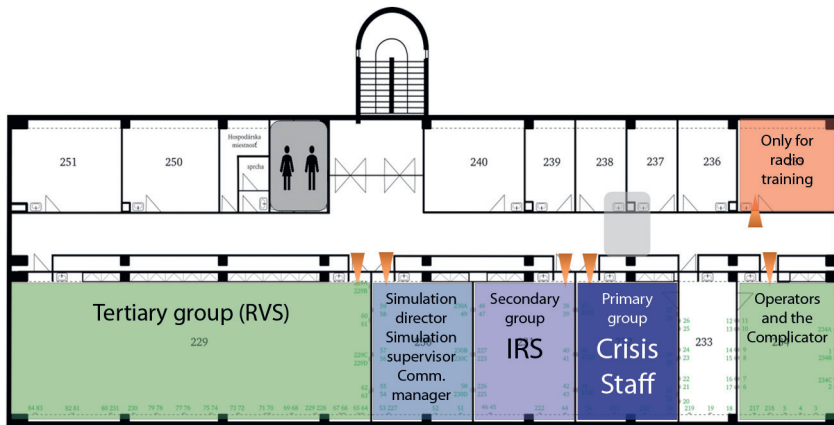


Figure 7: The possible workspace layout

Source: Compiled by the authors

The schedule

Planning a maximum of three simulation iterations in one day is reasonable, especially with students without experience in simulation technologies.

In the preparation stage, the students should learn about the scenario and the main objective of the simulation and divide the participants into three subgroups. Consequently, they should complete a mini-exercise where they know how to use communication tools and other technical aids. The students' level of technical skill must not affect their performance during the simulation. Otherwise, the outputs could be distorted. The mini-exercise should take approximately 15 minutes. Students should perform a simulation right after the mini-exercise. The simulation time is not strictly defined. It depends on the skill and maturity of the cooperation of the exercise participants. Individual milestones and event horizons should be triggered based on group performance. The goal is for the

simulation to exhibit proper dynamics and for the time stressor to always be present, thus multiplying the impact of hybrid warfare.

After-action review and take-home package

The after-action review is essential feedback on the way students prepare. It consists of (not the final list; options are possible):

- The statistics of (un)solved problems are shown in the picture above.
- The feedback of students on the scenario – e.g. what was the biggest challenge?
- The list of consequences of hybrid warfare does not always link directly to the source of the problem. For example, a firefighter car may not reach the fire scene in time because of a lost driver, but distorted communication could also be a consequence of hybrid warfare.
- Voice analysis – reflects the decision-making process and communication nuances.
- Highlights – highlighting certain moments within the team’s work.
- Overall discussion with the students.

The take-home package includes all the digital recordings and material necessary to re-analyse and evaluate the exercise. The file structure of such a package is shown in the picture below.



Figure 8: An example of statistics on the success of cyberattacks

Source: Compiled by the authors

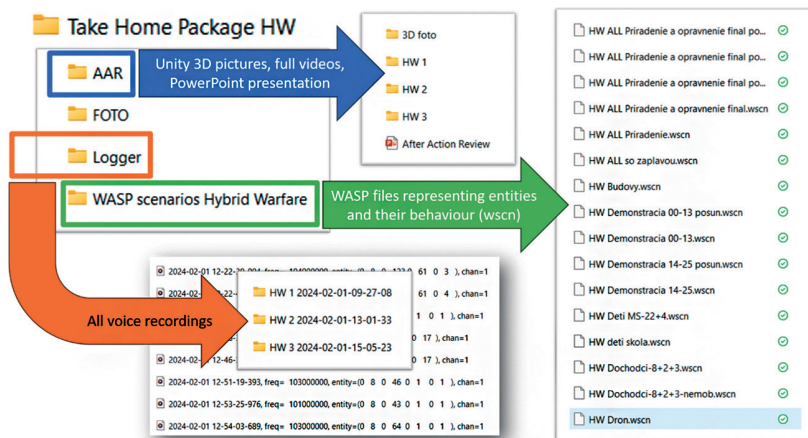


Figure 9: Take-home package file structure

Source: Compiled by the authors

More options for hybrid scenario – A military environment

Instead of a conclusion, this chapter focuses on the hybrid scenario type in the military environment, which comprises three different scenarios, two covering armed combat operations (offence, defence). At the same time, the last one addresses stability operations. The description of the opponents' hybrid footprint can be summarised as:

- hybrid dispersed attack: red forces – regular forces, special operations forces (SOF), irregular elements (guerrilla); blue forces – regular forces
- hybrid retrograde operation (hybrid delay): red forces – regular forces, SOF, irregular elements (insurgent); blue forces – regular forces
- hybrid stability operations: red forces – regular forces, SOF, irregular elements (guerrilla); blue forces – regular forces

The principles of establishing the scenarios' themes are triggered by the hybrid adversary's simulated behaviour and by the scenarios' correspondence with potential strategic-level COAs of the hybrid adversary, such as regional operations, transition operations and adaptive operations.

Objectives of the exercise in the military scenario

The main objective is to familiarise educational audiences with the principle of action–reaction–counteraction in a hybrid context using RVS and the WASP constructive simulation. Other secondary educational objectives are:

- understanding the hybrid behaviour of a tactical opponent through simulations conducted during dedicated scenarios
- simulating the decisive, shaping and sustaining operations within a hybrid operational environment
- acquiring and practising the TTPs necessary to deal with a tactical hybrid adversary
- determining and simulating the centres of gravities (COGs) in the context of hybrid operations, as well as understanding their volatile operational behaviours

Other elements focusing on describing scenarios specific to the military environment (hybrid dispersed attack, hybrid delay, hybrid stability operations) are highlighted in the chapter of the second volume of *Hybrid Warfare Reference Curriculum. Elective Seminars*, entitled *Designing Adversary Hybrid COAs*.